Annex F

'People Streets' Treatment at Badger Hill Primary School, York

Preliminary Design Report
(Workstages 1–3)

City of York Council (CYC)

May-22

Delivering a better world

Quality information

Prepared by	Verified / Approved by
Luke Oddy	Neil Brownbridge
	
Principal Consultant	Regional Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	26/02/2024	Minor amendments following client review.		Neil Brownbridge	Regional Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name
n/a	1	City of York Council

Prepared for:

City of York Council (CYC)

Prepared by:

AECOM Limited
5th Floor, 2 City Walk
Leeds LS11 9AR
United Kingdom

T: +44 (0)113 391 6800
aecom.com

Table of Contents

Figures

Tables

Executive Summary

Located approximately three miles south-east of York city centre, Badger Hill Primary School has been identified as a potential location for '*People Street'* enhancement measures. Broadly speaking, this involves reducing the impact of motor vehicles to create a more pleasant and appealing environment for pedestrians, cyclists and mini-scooters approaching the school. At this location a particular objective is to improve the environment on Crossways and Sussex Road by reducing the impact of traffic/parked vehicles and improving crossing points.

A trial layout was implemented by Sustrans in June 2021 during which build-outs were placed in the road ahead of the school drop-off period and were left in place until an hour after the end of the school day, colourful stencils of badgers' footprints and the school's logo were used to create temporary artwork and groups of pupils planted flowers and herbs in pots, which were placed into the buildouts.

The most popular design element trialled was the street art to indicate a school zone (56 respondents, 88% approve), closely followed by plants and greenery (51 respondents, 80% approve).

Since the trial, a residents parking zone (ResPark), identifiable by entry and exit signs, has been implemented (R39A). Residents are currently issued one free permit, which is subsidised by the University of York due to their commitments from the Section 106 Agreement associated to the planning approval for the expansion of the University. It is understood that parking within R39A has a 10-minute grace period, which gives opportunity for parents to drop off / pick up outside the school.

AECOM were appointed in October 2022 to undertake scheme design and optioneering with the objective of developing a design package of proposed interventions to enable CYC to take a proposed scheme to consultation.

To inform scheme development site visits have been undertaken and a range of survey data has been collected, collated and analysed. This has included 24-hour speed and traffic flow surveys; a pedestrian/cycle movement/crossing survey and a parking beat survey, both undertaken in 5-minute intervals before, during and after school drop-off and collection periods; manual classified turning count data; and recorded personal injury collision data. The above evidence base has specifically confirmed the following specific existing issues:

- Occurrence of kerbside parking during school drop-off and collection periods is highest along the southern kerbline of Crossways and western footway of Sussex Road, with parking restricting visibility at uncontrolled crossing locations near to the school entrance.
- As expected, the highest proportion of pedestrians cross at the Crossways / Sussex Road junction directly outside of the school entrance, with parents / children observed to frequently cross the junction diagonally as they depart the school ground.

Although opportunity to provide public realm enhancement is limited due to the available verge width and residents' driveways, to ensure the proposed scheme is not just focussed on engineering measures but also about creating a sense of place, opportunities for small scale public realm enhancements have been sought as part of the scheme design development.

Design options were discussed with CYC Officers during interim progress meeting, with four scheme proposals identified as summarised in the table overleaf. Each option provides an increased level of intervention and hierarchy of cost / benefit to meet specified objectives.

Option 1 Do Minimum	Option 2 Low Cost	Option 3 Medium Cost	Option 4 High Cost
Cost Estimate			
£82,000	**£195,000**	**£476,000**	**£766,000**
LTN 1/20 – Cycle Level of Service Audit Score			
60% (Critical Fail)	**62% (Critical Fail)**	**62% (Critical Fail)**	**72% (No Critical Fail)**
School Street Audit Score			
52%	**57%**	**67%**	**74%**
Design Feature Variables			
• Replacement of existing and Introduction of additional bollards to prevent verge side parking. • Sections of low-level fencing around School Entrance junction to encourage crossing at existing uncontrolled crossing locations. • 1057 markings / school markings / 2D speed tables and additional signage. • Additional 'School slow down' signage.	*All relevant do minimum interventions plus:* • Resurfaced raised table / red additive to further deter parking. • Resurfaced footways and tactile renewal. • Relocation of northern arm crossing at School Entrance junction. • Additional fencing along northeast corner of School Entrance junction.	*All relevant do low-cost interventions plus:* • Extension of existing raised table. • Formalisation of crossings at the junction over Sussex Road / Crossways (Zebra). • Widened footway (2.5m) linking to park along Crossways / Deramore Drive West • Additional crossing over Sussex Road between Bishopsway and Brentwood Crescent (Zebra).	*All relevant do medium cost interventions plus:* • Widened footway (2.5m) of Sussex Road western footway to proposed Field Lane crossing. • Additional crossing over Sussex Road between Bishopsway and Brentwood Crescent (Zebra). • Additional signalised Parallel Crossing of Field Lane.

Table 1. Badger Hill Primary School – Option Summary

All proposals provide a benefit in comparison to the existing layout, with significant improvements to safety at crossing locations near to the school entrance and limiting the impact of parked vehicles on verges.

The hierarchy of cost and infrastructure proposals included within the four scheme options is reflected within the resulting audit scores and benefit in relation to initial project objectives.

The hierarchy of options will allow CYC to engage in local stakeholder engagement activities and decision making regarding progression to the next stage of design.

1. Introduction

1.1 Study Area

The study area, shown in **Figure 1**, is located in Badger Hill, three miles south-east of York city centre. The main and only school entrance is on to Crossways at the junction of Sussex Road.

The extent of the red line boundary was discussed in a pre-scoping meeting between AECOM and CYC on 8th Sept 2022. The outcome of this meeting was a slight extension to the existing redline boundary to incorporate the connection to the public park located on Deramore Drive West and the Sussex Road junction with Field Lane.

Crossways and Sussex Road are both 20mph zones, without any significant traffic volume or speed issues. However, during school drop-off and pick-up times, pedestrian and car traffic is noticeably increased.

The surrounding residential streets are part of a Residential Parking Zone, however the 10 minutes grace period allows parents dropping off to do so without punishment.

Figure 1. Study Area Plan/Red Line Boundary (Source – Google Maps)

1.2 Site Trial (in 2021)

Sustrans carried out a trial on 10/06/2021 in which build-outs were placed in the road ahead of the school drop-off period and were left in place until an hour after the end of the school day. The most popular design element trialled was the street art to indicate a school zone (56 respondents, 88% approve), closely followed by plants and greenery (51 respondents, 80% approve).

An indicative Street Sketch and Street Trail as proposed by Sustrans, included within the accompanying Sustrans Report is provided as **Figure 2**.

Figure 2. Sustrans Street Trail (Source: Sustrans)

Following this initial trial, CYC commissioned AECOM to deliver up to three Preliminary Design solutions to enable a proposed scheme to be taken to consultation. This includes a low-cost, medium-cost and high-cost option. The project aims and objectives are set out below.

1.3 Project Aims

The aims of the scheme are to improve the environment for pedestrians, cyclists and mini-scooter users approaching the school via Sussex Road and Crossways by reducing the impact of traffic in this area and improving the opportunity for defined crossing locations which are clearly visible to all users.

1.4 Project Objectives

To implement civil engineering interventions to change the built environment to enhance the priority towards pedestrian and cyclists, away from motor vehicle traffic and to discourage parent parking on verge areas during school drop-off and pick-up times.

1.5 Key Workstages

To respond to the project aims and objectives, AECOM agreed a staged approach with Key Workstages as shown below, with further detail provided within the associated Commissioning Brief, approved by CYC on 26th October 2022.

This document is the first of two reports to be provided and covers Key Workstages 1-3. Report 2 will be issued after completion of Workstages 4-6, assuming the scheme receives approval to progress beyond preliminary design.

Following on from an initial workshop meeting with CYC at Concept Design Stage on 2nd March 2023, this report provides information relating to AECOM's proposed Preliminary Designs and associated supporting information to inform the Executive Members / Transport Board decision process.

1.6 Report Structure

The remaining sections of this report are structured as follows:

- **Chapter 2** summarises details of the Site Visit & Concept Optioneering
- **Chapter 3** provides results of Survey Data
- **Chapter 4** provides a summary of the Preliminary Design proposals
- **Chapter 5** provides details of High-level Cost Estimates
- **Chapter 6** summarises potential Design Feature Variables as required by CYC
- **Chapter 7** provides a summary of potential Traffic Regulation Orders (TRO)
- **Chapter 8** details both the Existing & Proposed Audits Scores
- **Chapter 9** concludes detailing a Summary and Next Steps.

Supporting technical appendices are referenced as appropriate.

2. Site Visit

2.1 General site observations

Before considering design proposals, AECOM undertook a site visit on 9th November 2022 between 2pm–4.30pm to gather information during a typical school PM peak period.

Sussex Road and Crossways are considered to be a low trafficked streets, within a Residents' Priority Parking Scheme area. However, during school pick-up / drop-off times, for a period of around quarter of an hour, increased parking from none-residents occurs, particularly near the school entrance junction. Parking observed during the site visit is shown in Location C, D and E in **Figure 5**.

Other general site observations included:

- Illegal parking occurrences are highest nearest the school entrance.
- Traffic flows are considered generally low, but were observed to increase significantly during school drop off / pick up times.
- Traffic speeds are typically low, with vehicles parked on the approach to the entrance junction restricting manoeuvrability along Sussex Road / Crossways during school drop off / pick up times.
- A significant number of pedestrians / school children cross the Sussex Road / Crossways junction directly outside of the school entrance, not following the existing uncontrolled crossing locations.
- Significant number of parents/carers drive to drop off / pick up their children from school. However, the majority of parents/carers and school children who walk are routed via Crossways.
- Existing bollards to prevent parking on the grass verges are in poor conditionand detracts from the aesthetic.
- The carriageway is constructed from concrete slab paving, with defects and cracking at the raised junction outside of the school entrance.

Figure 3 and **Figure 4** below identifies the location and **Figure 5** shows the pictures taken during the site visit.

Figure 3. Site Photograph Locations (Source – Google Maps)

Figure 4. Site Photograph Locations (Source – Google Maps)

Location A

Location B

Location C

Location D

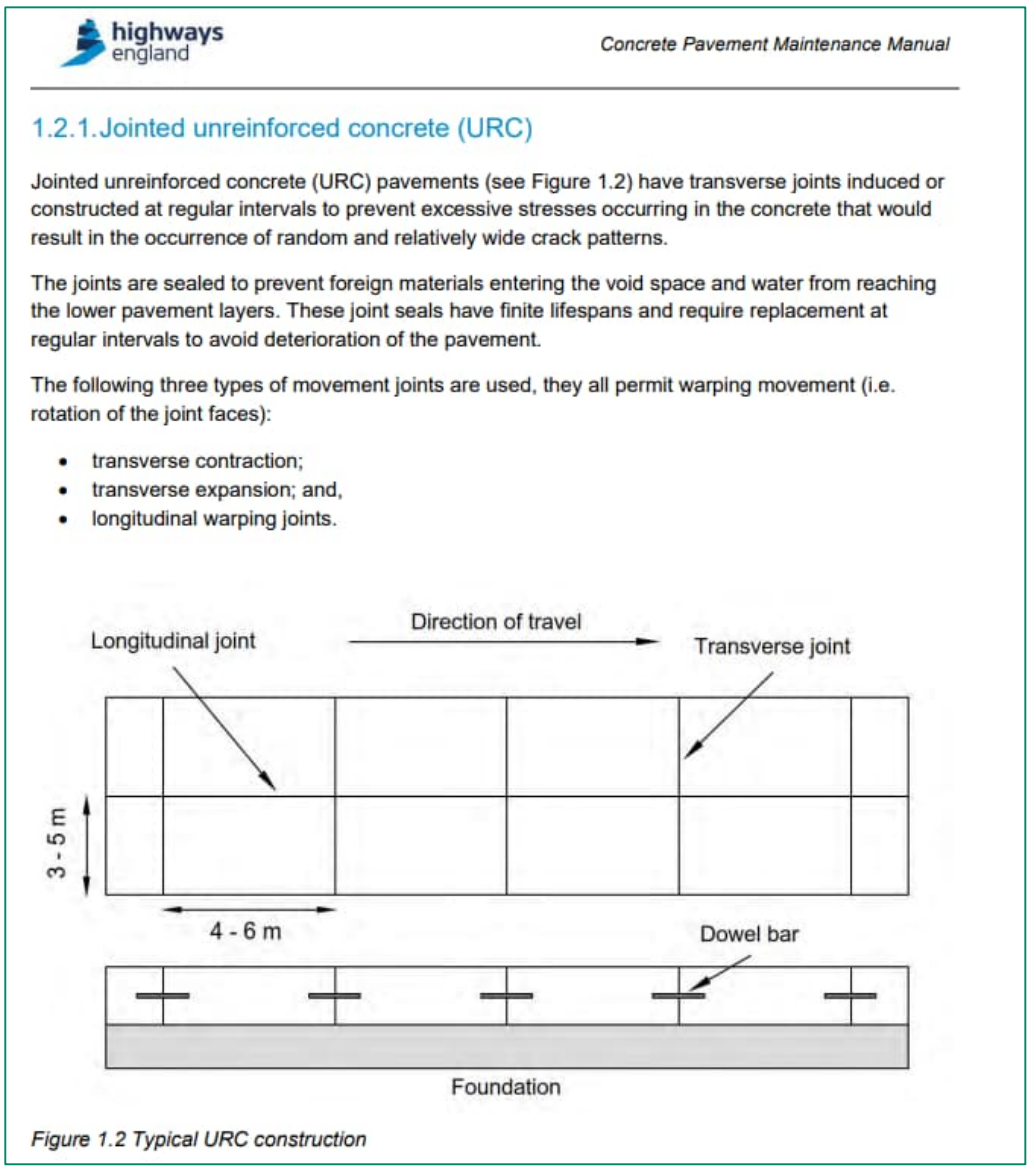
Location E

Location F

Figure 5. Site Photographs

2.2 Concrete slab surfacing

The site visit confirmed that the carriageway is constructed of jointed concrete pavement slabs approximately 5m x 6m, as per **Figure 6** below (although the slab within the study area does not appear to have a central longitudinal joint as per the image overleaf). Unfortunately, this is likely to be problematic / may prove cost prohibitive for either resurfacing or constructing buildouts.



highways england

Concrete Pavement Maintenance Manual

1.2.1. Jointed unreinforced concrete (URC)

Jointed unreinforced concrete (URC) pavements (see Figure 1.2) have transverse joints induced or constructed at regular intervals to prevent excessive stresses occurring in the concrete that would result in the occurrence of random and relatively wide crack patterns.

The joints are sealed to prevent foreign materials entering the void space and water from reaching the lower pavement layers. These joint seals have finite lifespans and require replacement at regular intervals to avoid deterioration of the pavement.

The following three types of movement joints are used, they all permit warping movement (i.e. rotation of the joint faces):

- transverse contraction;
- transverse expansion; and,
- longitudinal warping joints.

Figure 1.2 Typical URC construction

Figure 6. Typical Concrete Pavement (Source: HE - Concrete Pavement Maintenance Manual, June 2021)

Based on on-site observations, concrete surfacing is prevalent throughout the study area. The exceptions are Field Lane and the entrance to Badger Hill Primary School which appears to be flexible (asphalt) pavement construction. Estimated cost associated with proposals in this location (entrance to the school) will increase this is also found to contain underlying concrete construction.

Concrete pavement breakout has not been included within proposals. However, the proposed extension of the raised table will include adjustments to the drainage within the concrete pavement and re-jointing.

2.3 Residents' Priority Parking Scheme

The Residents' Priority Parking Scheme (ResPark) is a zone identifiable by entry and exit signs within the study area; there are no road markings or specific parking bays associated with the resident parking. The residents are currently issued one free permit, which is subsidised by the University of York (UoY) due to their commitments from the Section 106 Agreement associated to the planning approval for the expansion of the University. The Section 106 Agreement and parking surveys were used as a reason to bring the zone into operation; this was discussed at the Executive Member decision session on 21st July 2020. There is a description of the relevant transport elements of the S106 agreement in the report, as follows:

In summary, the associated S106 Agreement states:

- The Developer is to fund the detailed [car parking] survey;
- If the survey shows that the increase is caused by students or other persons having business at the UoY, pay the council the costs of introducing a scheme of parking and waiting restrictions to cover the area or areas where parking has increased +100m around those affected areas;
- If a scheme of waiting or parking restrictions is implemented, pay the Council the costs for having a presence to enforce them for a period of 15 years from first occupation; and
- If the scheme of waiting or parking restrictions is implemented the Council shall pay the developer the penalty charge income (less reasonable admin. costs) for a period of 15 years from first occupation.

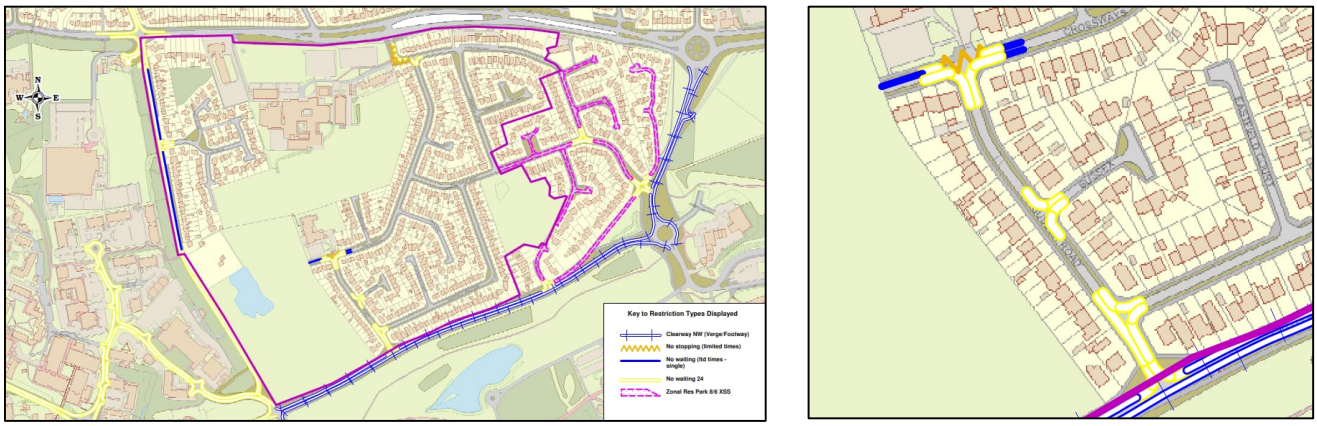


Figure 7. Residents Parking Zone

Pre-scoping discussion with CYC confirmed the following:

"*You can include the areas with double yellow lines within the scope because this does not alter the operation or enforcement of the ResPark zone as these are areas that people are explicitly not allowed to park*." Richard Milligan, 20/09/2022 CYC.

AECOM noted that restrictions associated with changes to the TRO also limit the potential benefits associated with implementing alternative enforceable restrictions to prevent parents/carers parking directly outside of the school during peak hours. Specifically, parents/carers are currently aware of the 10-minute grace period allowing dropping off / pick up and will likely continue to park close to the school entrance without further limitations.

3. Survey Data

3.1 Key Findings

1. Illegal parking occurrences are highest nearest the school entrance.
2. Traffic flows are considered low. Therefore, an on-street quiet route for cyclists meets LTN 1/20 requirements. However, onward connections for cyclist and pedestrians across Field Lane represent a critical safety issue.
3. 85th percentile traffic speeds are slightly higher than the posted 20mph speed limit along Crossways and at the posted 20mph speed limit along Sussex Road. Therefore, further traffic calming measures and signage would be beneficial to further reduce speeds near to the school entrance.
4. The highest proportion of pedestrians cross the Sussex Road / Crossways junction directly outside of the school entrance.
5. Recorded personal injury collision data does not suggest any pattern or trend in collisions. However, does indicate that a controlled crossing of Field Lane would be beneficial to reduce any incidents between pedestrians / cycles and motor vehicles.

3.2 Data Collection

Traffic survey data was collected in order to inform design proposals, with the following surveys undertaken between Thursday 17th November-Wednesday 23th November 2022:

- **Manual classified turning count data** at the Sussex Road/Crossways and Sussex Road/Field Lane junctions between the hours of 07:45-09:00 and 14:45 -16:00 Monday to Sunday.
- **A parking beat survey** across the study area observed in 5-minute time periods during both the AM and PM peak periods, between the hours of 07:45-09:00 and 14:45-16:00 (which covers half an hour before and after school opening / closing times) on each of the survey days.
- **An active travel crossing survey** observed in 15-minute time periods during both the AM and PM peak periods, between the hours of 07:45-09:00 and 14:45-16:00 (which covers half an hour before and after school opening / closing times) on each of the survey days.

In addition, **24-hour speed surveys and traffic flows** were also undertaken between Thursday 10th November - Friday 18th November 2022 at one location on Crossways close to Bishopsway; one location on Sussex Road close to Sussex Close; and one location along Field Lane.

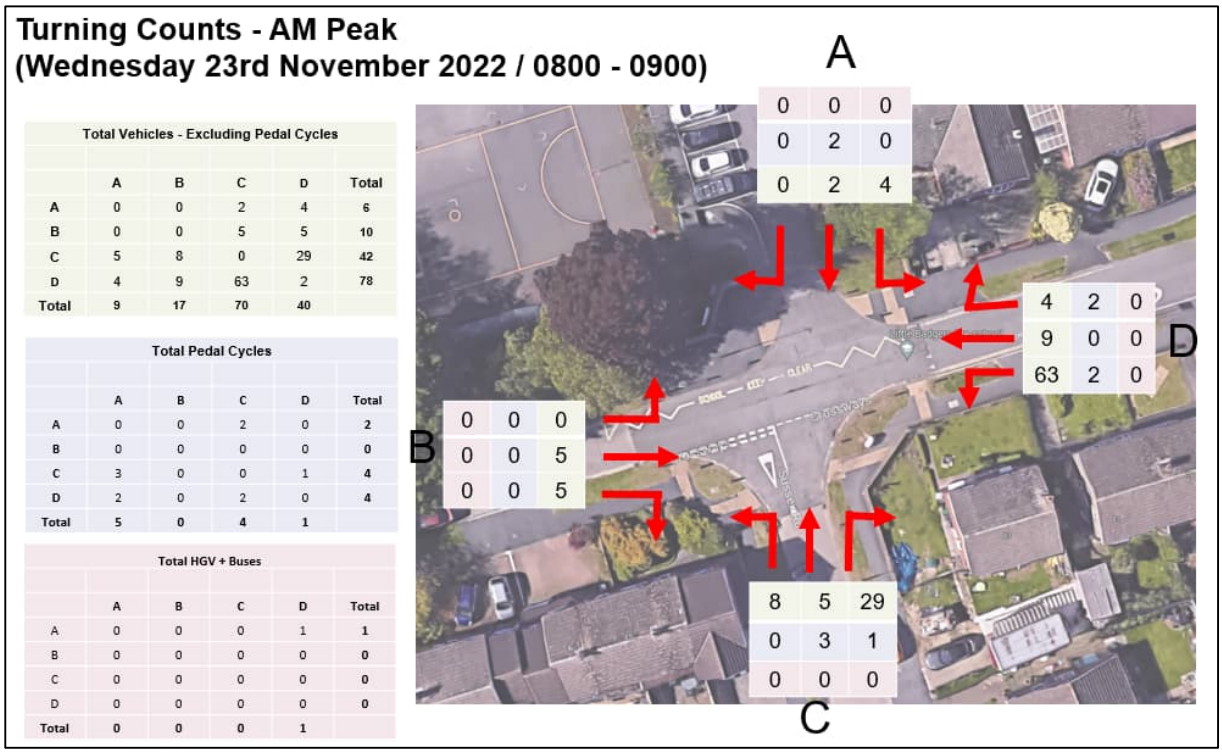
Summary detail on the outputs of the above surveys are provided below. In order to assess both the parking beat and active crossing surveys, the study area was split into separate zones as shown in the following sections.

3.3 Manual Classified Counts

Manual classified counts were assessed in order to determine the typical traffic flows in the immediate vicinity of Badger Hill Primary School. The resulting survey information was then used to determine the traffic / pedal cycle flows and HGV percentages in the surrounding area and, in conjunction with speed survey information, used to determine suitable interventions in relation to LTN 1/20 audit criteria.

The highest combined traffic counts within the survey period were determined to be on Wednesday 23rd November, between 08:00-09:00 for the AM Peak and on Friday 18th November, between 15:00-16:00 for the PM Peak.

The traffic flows at the Sussex Road/Crossways and Sussex Road/Field Lane during these time periods are showing in **Figure 8** to Figure 11.



Total Vehicles - Excluding Pedal Cycles					
	A	B	C	D	Total
A	0	0	2	4	6
B	0	0	5	5	10
C	5	8	0	29	42
D	4	9	63	2	78
Total	9	17	70	40	

Total Pedal Cycles					
	A	B	C	D	Total
A	0	0	2	0	2
B	0	0	0	0	0
C	3	0	0	1	4
D	2	0	2	0	4
Total	5	0	4	1	

Total HGV + Buses					
	A	B	C	D	Total
A	0	0	0	1	1
B	0	0	0	0	0
C	0	0	0	0	0
D	0	0	0	0	0
Total	0	0	0	1	

Figure 8. AM Peak (08:00-09:00) Traffic Flows – Crossway / Sussex Road junction junction

As shown in **Figure 8** above, during the AM peak a total of 29 vehicles and 1 cyclist turned right onto Crossways from Sussex Road; 5 vehicles and 3 cyclists made an ahead movement into the school; and 8 vehicles turned left. Of the movements along Crossways East, 63 vehicles and 2 cyclists turned left onto Sussex Road; 9 vehicles made a westbound ahead movement; and 4 vehicles and 2 cyclists turned right into the school. From Crossways West, 5 vehicles made an eastbound ahead movement and 5 vehicles turned right onto Sussex Road. Four vehicles made a left turn out of the school onto Crossways, and 2 vehicles and 2 cyclists travelled southbound onto Sussex Road.

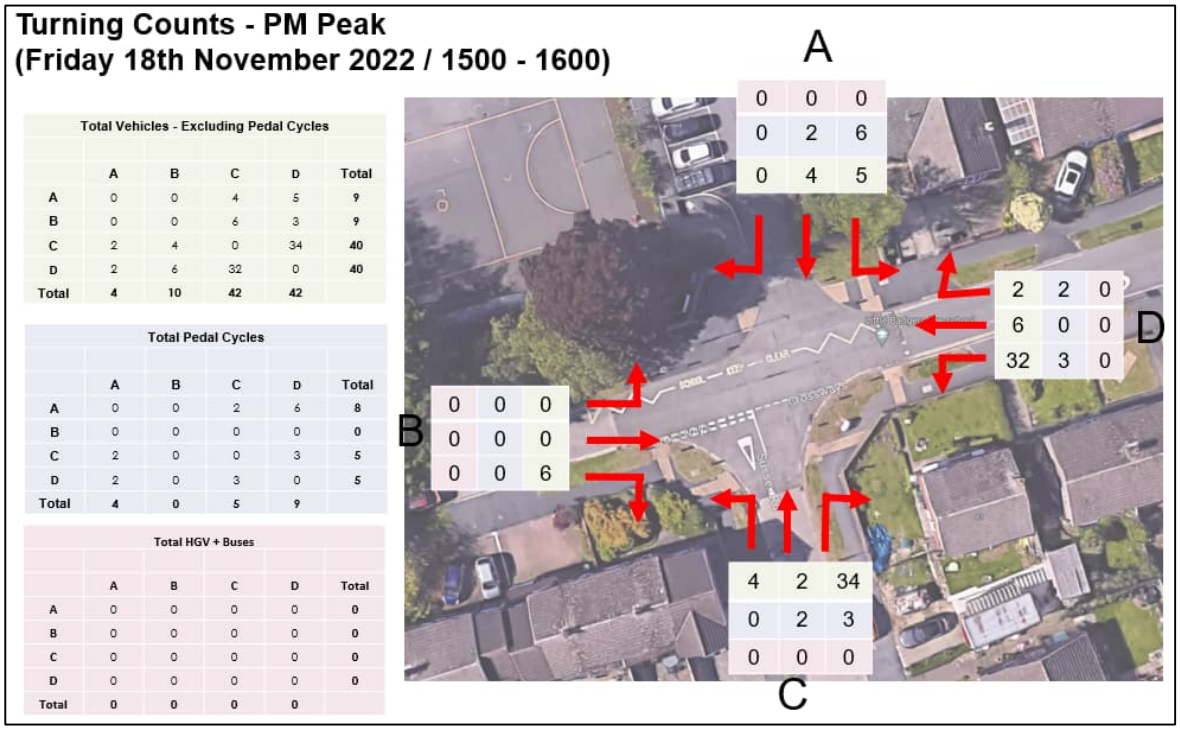


Figure 9. PM Peak (15:00-16:00) Traffic Flows – Crossway / Sussex Road junction

As shown in **Figure 9** above, a total of 34 vehicles and 3 cyclists turned right onto Crossways from Sussex Road; 2 vehicles and 2 cyclists made an ahead movement into the school; and 4 vehicles turned left. Of the movements along Crossways East, 32 Vehicles and 3 cyclists turned left onto Sussex Road; 6 vehicles made a westbound ahead movement; and 2 vehicles and 2 cyclists turned right into the school. From Crossways West, 6 vehicles turned right onto Sussex Road; 5 vehicles and 6 cyclists made a left turn out of the school onto Crossways; and 4 vehicles and 2 cyclists travelled southbound onto Sussex Road.

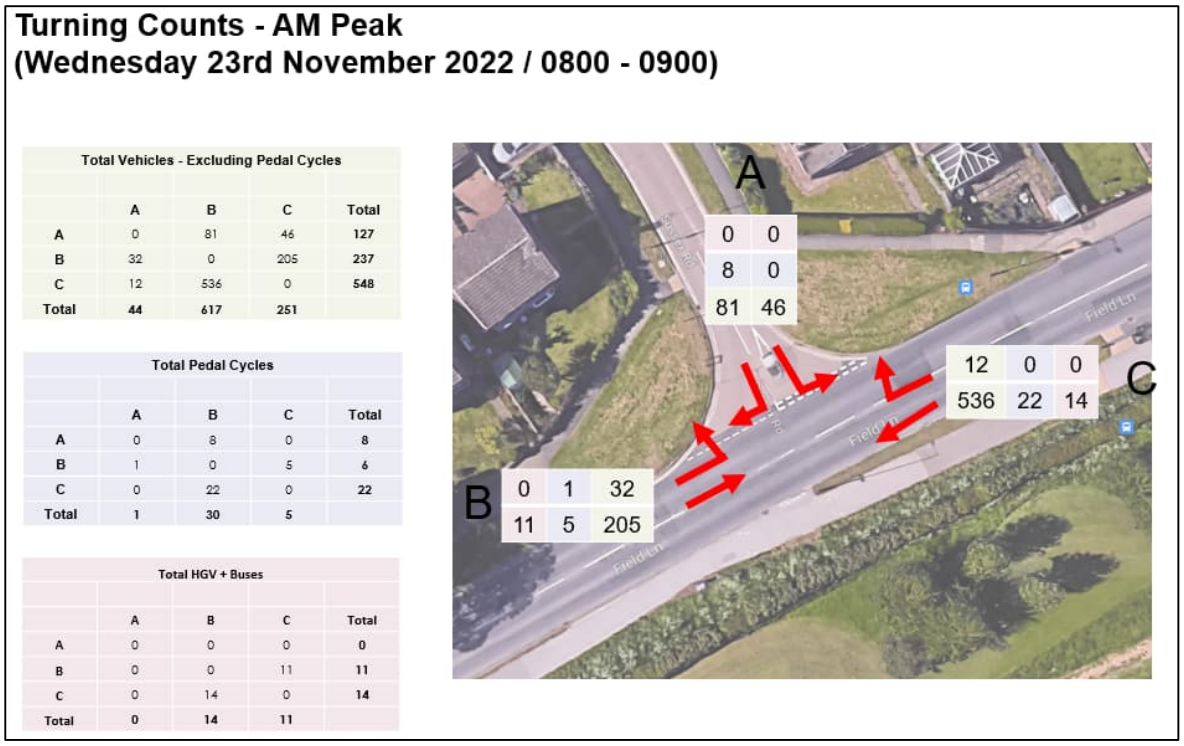


Figure 10. AM Peak (08:00-09:00) Traffic Flows – Field Lane / Sussex Road junction

As shown in **Figure 10** above, during the AM peak a total of 32 vehicles and 1 cyclist turned left into Sussex Road from Field Lane, and 12 vehicles turned right into Sussex Road from Field Lane. Of the movements from Sussex Road to Field Lane, 46 vehicles turned left, and 81 vehicles and 8 cyclists turned right. Along Field Lane, 205 vehicles and 5 cyclists travelled eastbound, and 536 vehicles and 22 cyclists travelled westbound.

Turning Counts - PM Peak
(Friday 18th November 2022 / 1500 - 1600)

Total Vehicles - Excluding Pedal Cycles

	A	B	C	Total
A	0	38	43	81
B	35	0	266	301
C	23	258	0	281
Total	58	296	309	

Total Pedal Cycles

	A	B	C	Total
A	0	6	0	6
B	9	0	8	17
C	0	18	0	18
Total	9	24	8	

Total HGV + Buses

	A	B	C	Total
A	0	0	0	0
B	0	0	5	5
C	0	8	0	8
Total	0	8	5	

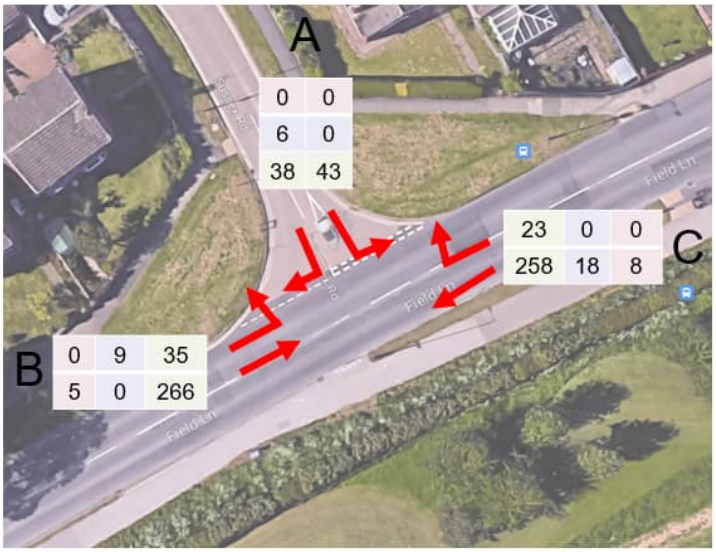


Figure 11. PM Peak (15:00-16:00) Traffic Flows – Field Lane / Sussex Road junction

As shown in **Figure 11** above, during the PM peak a total of 35 vehicles and 9 cyclists turned left into Sussex Road from Field Lane, and 23 vehicles turned right into Sussex Road from Field Lane. Of the movements from Sussex Road to Field Lane, 43 vehicles turned left, and 38 vehicles and 6 cyclists turned right. Along Field Lane, 266 vehicles travelled eastbound, and 258 vehicles and 18 cyclists travelled westbound.

In summary, the recorded turning count data at the two junctions indicates that, during peak periods, traffic flows are considered low along Sussex Road, with no recorded heavy vehicle movements. However, due to the nature of Field Lane, it experiences higher general and HGV traffic.

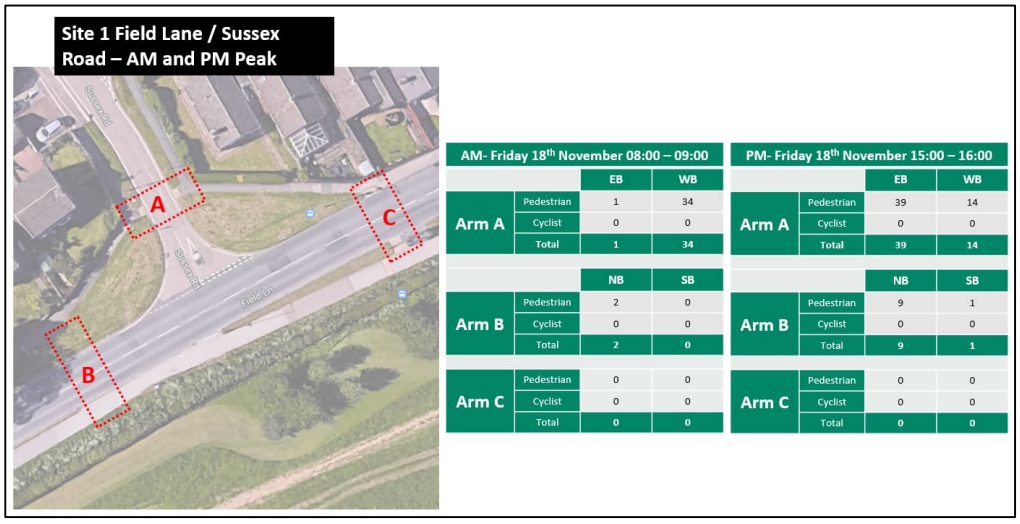
3.4 Active Travel Crossing Survey

Pedestrian and cycle crossing counts were assessed in order to determine the volume and location of pedestrians crossing in the study area. The results were then used to determine the most beneficial location for proposed active travel crossing facilities.

The location and volume of crossing pedestrians during the morning (0800-0900) and afternoon (1500-1600) school peak periods is shown in the following section, with the study area split into Zones 1-8, with Zones 1, 5, 8 and 9 representing specific crossing movements at junctions.

Zone 1 - Field Lane / Sussex Road

Pedestrian and cycle crossing movements during the AM and PM peak at the Field Lane / Sussex Road junction indicate that majority of crossing movements are east / west across Arm A, with 35 and 53 crossing movements during the AM and PM peaks respectively.



AM- Friday 18th November 08:00 – 09:00

		EB	WB
Arm A	Pedestrian	1	34
	Cyclist	0	0
	Total	1	34
		NB	SB
Arm B	Pedestrian	2	0
	Cyclist	0	0
	Total	2	0
Arm C	Pedestrian	0	0
	Cyclist	0	0
	Total	0	0

PM- Friday 18th November 15:00 – 16:00

		EB	WB
Arm A	Pedestrian	39	14
	Cyclist	0	0
	Total	39	14
		NB	SB
Arm B	Pedestrian	9	1
	Cyclist	0	0
	Total	9	1
Arm C	Pedestrian	0	0
	Cyclist	0	0
	Total	0	0

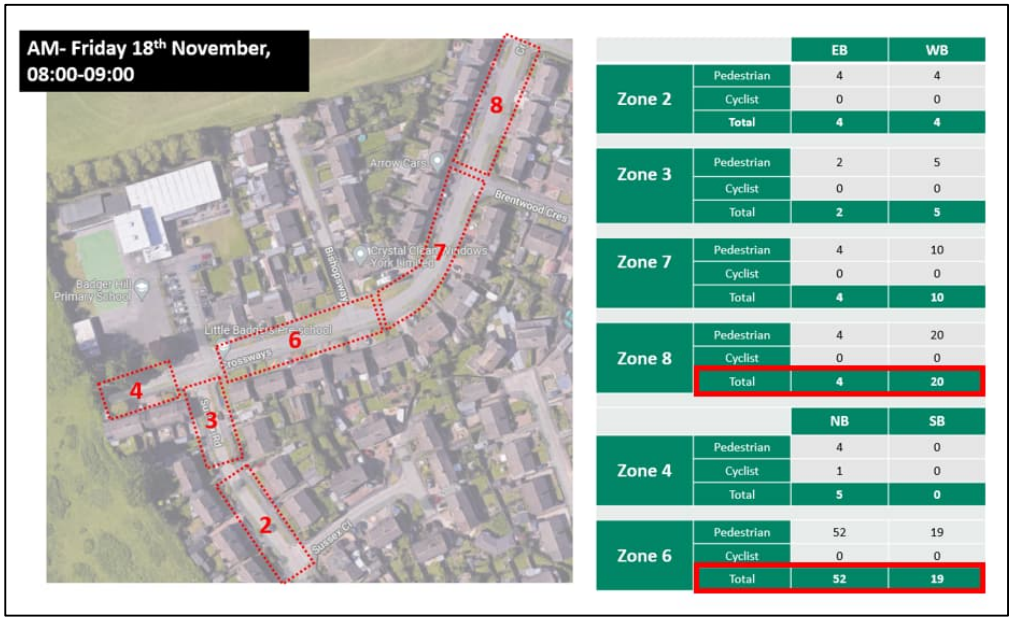
Figure 12. AM / PM Peak, Field Lane / Sussex Road - Active Traffic Flows

A small number of crossing movements were undertaken at Arm B; whereas no crossing movements were undertaken at Arm C.

At the junction, the southern footway of Field Lane is a shared foot / cycleway. An uncontrolled crossing is provided at Arms C connection the bus stop to / from Badger Hill and dropped kerb cycle on / off facility is provided opposite Sussex Road. Both facilities are considered unsuitable due to the traffic flows and speed along Field Lane.

Zone 2, 3, 4 ,6 & 7

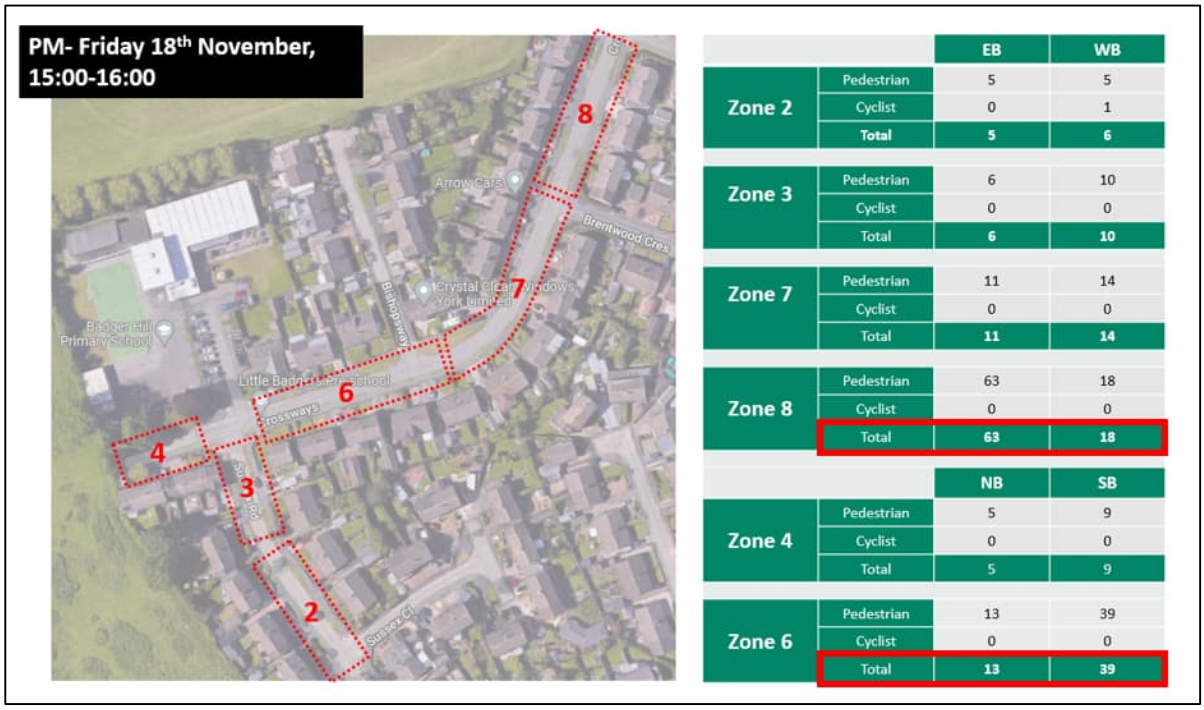
The highest crossing volumes within the study area along linear sections (not at a specific junction) were determined to be on Friday 18th November, between 08:00-09:00 for the AM Peak and on Monday 31st October, between 15:00 - 16:00 for the PM Peak. The location and volume of crossing pedestrians and cyclists during these time periods is shown in **Figure 13** and **Figure 14**, with the study area split into Zone 1-8.



		EB	WB
Zone 2	Pedestrian	4	4
	Cyclist	0	0
	Total	4	4
Zone 3	Pedestrian	2	5
	Cyclist	0	0
	Total	2	5
Zone 7	Pedestrian	4	10
	Cyclist	0	0
	Total	4	10
Zone 8	Pedestrian	4	20
	Cyclist	0	0
	Total	4	20
		NB	SB
Zone 4	Pedestrian	4	0
	Cyclist	1	0
	Total	5	0
Zone 6	Pedestrian	52	19
	Cyclist	0	0
	Total	52	19

Figure 13. AM Peak (08:00-09:00) Active Travel Flows

In total, Zones 6 and 8 had the highest number of east / west crossing movements during the AM peak, with 24 and 71 crossing movements respectively. Zone 3 has the least number of crossing movements with a total of 7 movements.



		EB	WB
Zone 2	Pedestrian	5	5
	Cyclist	0	1
	Total	5	6
Zone 3	Pedestrian	6	10
	Cyclist	0	0
	Total	6	10
Zone 7	Pedestrian	11	14
	Cyclist	0	0
	Total	11	14
Zone 8	Pedestrian	63	18
	Cyclist	0	0
	Total	63	18

		NB	SB
Zone 4	Pedestrian	5	9
	Cyclist	0	0
	Total	5	9
Zone 6	Pedestrian	13	39
	Cyclist	0	0
	Total	13	39

Figure 14. PM Peak (15:00-16:00) Active Traffic Flows

As within the AM peak, Zones 6 and 8 had the highest number of crossing movements during the PM peak, with 52 and 81 crossing movements respectively. Zone 2 has the least number of crossing movements with 11 total crossing movements.

In summary, the data indicates that crossing demand is highest within Zones 6 and 8. This corresponds with on-site observations, with the majority of crossing movements on Crossways occurring away from the junction with Sussex Road. As such, any proposed crossing facilities should be focused within these Zone 6 and Zone 8 locations.

Zone 5 - Sussex Road / Crossways

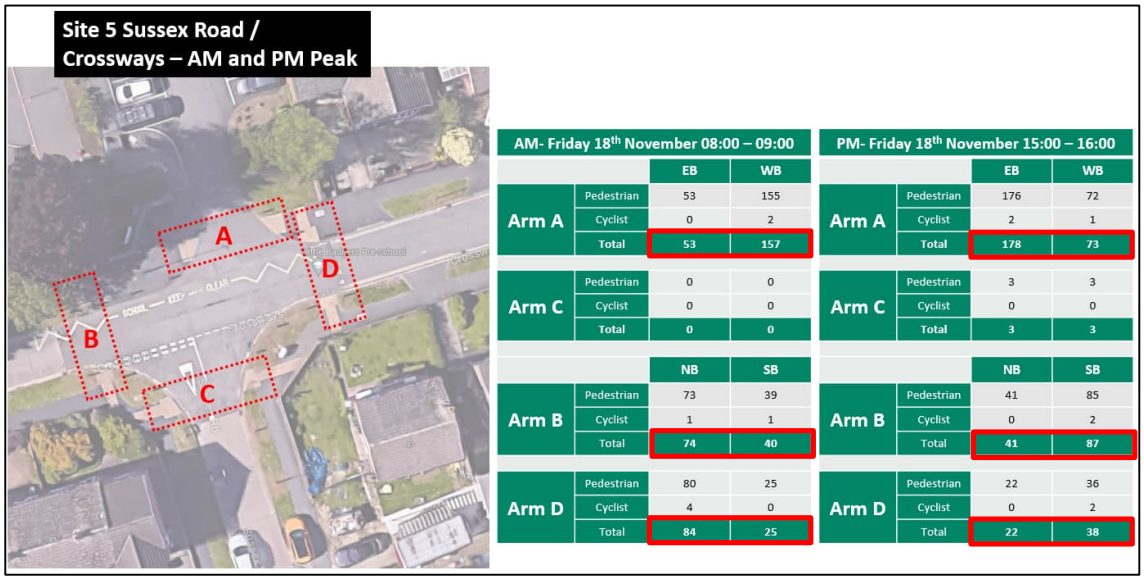
Pedestrian and cycle crossing movements during the AM and PM peak at the Sussex Road / Crossways junction (Badger Hill Primary School Entrance) are shown in **Figure 15**. In total, during the AM and PM peak hours there were 433 and 445 total crossing movements respectively. This indicates that enhanced crossing facilities would provide a significant benefit in this location.

The data specifically indicates that majority of crossing movements were as follows:

- Arm A (school entrance) with 210(AM) / 251(PM) total pedestrian/cycle crossing movements, of which three were cycle crossing movements.
- Arm B (Crossways (west)) with 114 (AM) and 128 (PM) total pedestrian/cycle crossing movements, of which zero were cycle crossing movements
- Arm D (Crossways (east)) with 109 (AM) and 60 (PM) total pedestrian/cycle crossing movements, of which six were cycle crossing movements

Negligible pedestrian/cycle crossing flows were observed across Arms C (Sussex Road).

On site observations also confirmed that pedestrian and cycle crossings movements at the junction are problematic due to parents / children crossing diagonally across the junction rather than at official crossing locations, with parked cars causing safety issues associated with blocking crossings and impacting visibility.



AM- Friday 18th November 08:00 – 09:00

		EB	WB
Arm A	Pedestrian	53	155
	Cyclist	0	2
	Total	53	157
Arm C	Pedestrian	0	0
	Cyclist	0	0
	Total	0	0

		NB	SB
Arm B	Pedestrian	73	39
	Cyclist	1	1
	Total	74	40
Arm D	Pedestrian	80	25
	Cyclist	4	0
	Total	84	25

PM- Friday 18th November 15:00 – 16:00

		EB	WB
Arm A	Pedestrian	176	72
	Cyclist	2	1
	Total	178	73
Arm C	Pedestrian	3	3
	Cyclist	0	0
	Total	3	3

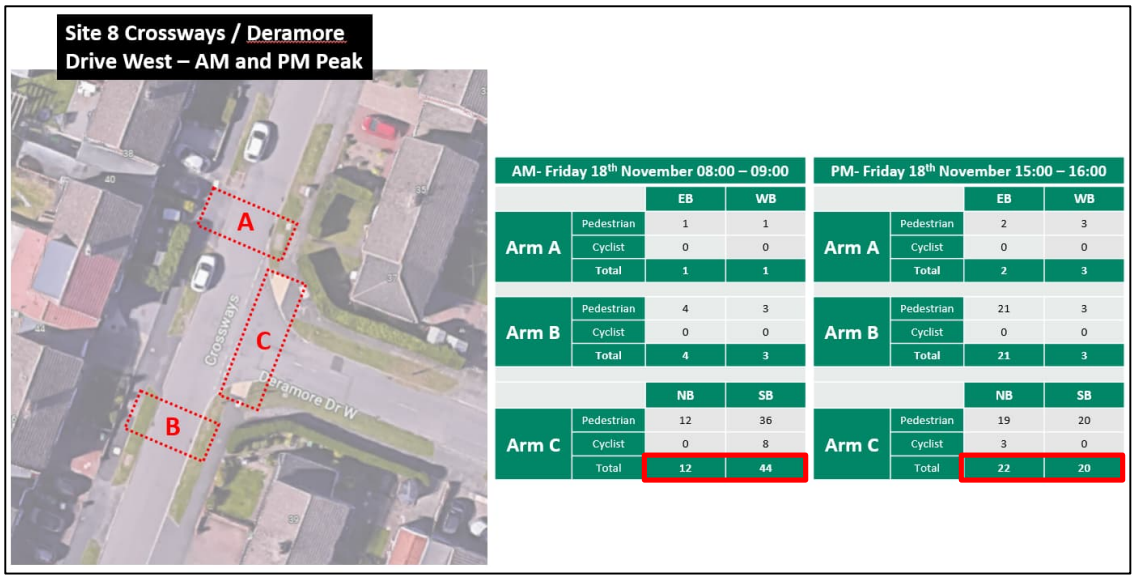
		NB	SB
Arm B	Pedestrian	41	85
	Cyclist	0	2
	Total	41	87
Arm D	Pedestrian	22	36
	Cyclist	0	2
	Total	22	38

Figure 15. AM / PM Peak Sussex Road / Crossways - Active Traffic Flows

Zone 8 - Crossways / Deramore Drive West

Pedestrian and cycle crossing movements during the AM and PM peak at the Crossways / Deramore Drive West junction indicate that majority of crossing movements are Arm C (Deramore Drive West), with 66 and 42 movements during the AM and PM peaks respectively as shown in **Figure 16**.

Fewer than 6 movements took place at Arm A during both peak hours, with 7 and 24 movements observed across Arm B during the AM and PM peaks respectively.



AM- Friday 18th November 08:00 – 09:00

		EB	WB
Arm A	Pedestrian	1	1
	Cyclist	0	0
	Total	1	1
Arm B	Pedestrian	4	3
	Cyclist	0	0
	Total	4	3

		NB	SB
Arm C	Pedestrian	12	36
	Cyclist	0	8
	Total	12	44

PM- Friday 18th November 15:00 – 16:00

		EB	WB
Arm A	Pedestrian	2	3
	Cyclist	0	0
	Total	2	3
Arm B	Pedestrian	21	3
	Cyclist	0	0
	Total	21	3

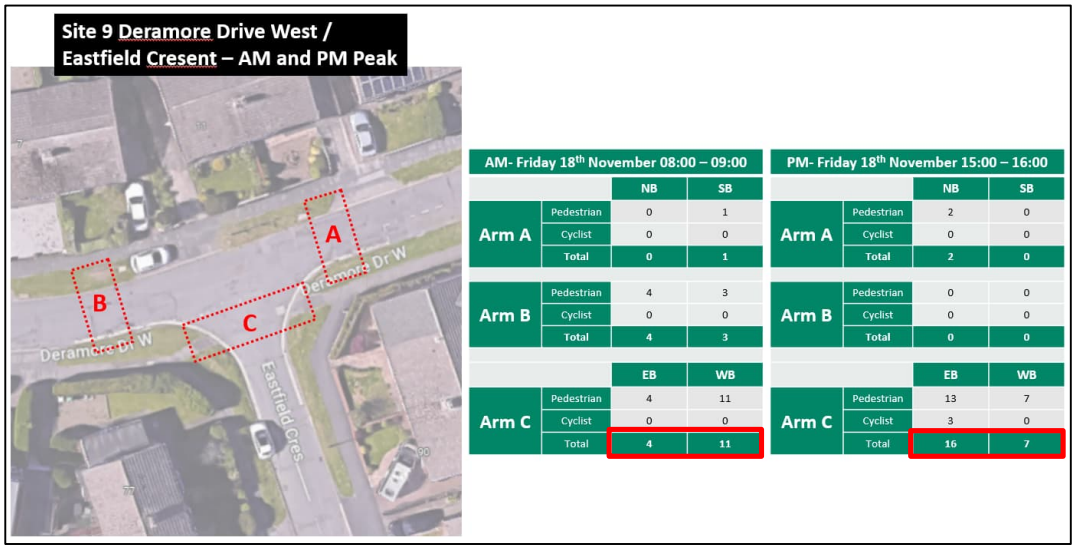
		NB	SB
Arm C	Pedestrian	19	20
	Cyclist	3	0
	Total	22	20

Figure 16. AM / PM Peak Sussex Road / Crossways - Active Traffic Flows

Zone 9 - Deramore Drive West / Eastfield Crescent

Pedestrian and cycle crossing movements during the AM and PM peak at the Deramore Drive West / Eastfield Crescent junction indicate that majority of crossing movements are Arm C (Eastfield Crescent), with 15 and 23 movements during the AM and PM peaks respectively, as shown in **Figure 17**.

Arms A and B had fewer than 8 total crossing movements during both peak hours.



AM- Friday 18th November 08:00 – 09:00

		NB	SB
Arm A	Pedestrian	0	1
	Cyclist	0	0
	Total	0	1
Arm B	Pedestrian	4	3
	Cyclist	0	0
	Total	4	3
		EB	WB
Arm C	Pedestrian	4	11
	Cyclist	0	0
	Total	4	11

PM- Friday 18th November 15:00 – 16:00

		NB	SB
Arm A	Pedestrian	2	0
	Cyclist	0	0
	Total	2	0
Arm B	Pedestrian	0	0
	Cyclist	0	0
	Total	0	0
		EB	WB
Arm C	Pedestrian	13	7
	Cyclist	3	0
	Total	16	7

Figure 17. AM / PM Peak Sussex Road / Crossways - Active Travel Flows

Summary

Based on collected survey data and reinforced with site observations, key pedestrian/cycle crossing movements are summarised in **Figure 18** below.

Figure 18. Summary of Key recorded Active Traffic Flows

3.5 Parking Beat Survey

A parking beat survey was undertaken to determine the location of on-street parking within the study area.

The highest classified traffic counts within the survey period were determined to be Wednesday 23rd November, between 08:00–09:00 for the AM Peak and Friday 18th November, between 15:00-16:00 for the PM Peak. As such, the following table shows the corresponding level of parking occurrences within the busiest 5-minute period, within each zone. A map with zone locations is shown in **Figure 19.**

Parking Beat Survey (2022 data)

AM - Wednesday 23rd November 2022 / 0800 – 0900
PM - Friday 18th November 2022 / 1500 - 1600

Busiest 5-minute period, within each peak hour, in each parking zone.

		AM				PM			
		L	I	H	F	L	I	H	F
Zone 1	Eastern Footway	0	0	0	0	0	0	1	0
	Western Footway	4	1	0	0	6	1	0	0
	Total	5				8			
Zone 3	Eastern Footway	0	0	0	0	0	0	0	0
	Western Footway	5	4	1	0	7	3	1	0
	Total	11				11			
Zone 6	Eastern Footway	0	0	3	0	0	0	3	0
	Western Footway	0	0	3	0	0	0	4	0
	Total	6				7			
Zone 7	Eastern Footway	5	0	0	2	6	1	0	1
	Western Footway	0	0	0	0	0	0	0	0
	Total	7				8			
Zone 8	Eastern Footway	2	0	0	0	3	0	0	1
	Western Footway	0	0	0	0	0	0	0	0
	Total	2				4			

		AM				PM			
		L	I	H	F	L	I	H	F
Zone 2	Northern Footway	2	0	0	0	2	0	0	0
	Southern Footway	0	0	4	0	0	0	6	0
	Total	6				8			
Zone 4	Northern Footway	0	2	1	0	0	2	0	1
	Southern Footway	2	1	0	0	2	1	0	0
	Total	6				6			
Zone 5	Northern Footway	0	0	0	0	0	0	0	0
	Southern Footway	2	5	0	0	2	5	0	0
	Total	7				7			

Figure 19. Parking Beat Survey – Wednesday 23rd November 2022, 08:00-09:00

It is evident from the above that Zone 3 has the highest number of overall parking occurrences and second highest number of illegal parking occurrences.

The majority of parking takes place on the western footway of Sussex Road, which is likely due to the available road width that results in parents all parking along the same kerbline so that the road is not blocked.

In addition to the ResPark restrictions, there is a short section of double yellow lining towards the Crossways / Sussex Road junction. Results indicate that parents are aware of the 10-minute grace period and attempt to park as close as possible to the school entrance.

Zone 5 has the highest number of illegal parking occurrences, with parking over double yellow lines and driveways along the southern footway.

This corresponds with on-site observations where vehicles parked along the southern footway of Crossways, often for longer than the specified 10-minute period.

3.6 Speed Survey

In addition to the traffic count data, traffic speed data was recorded at three locations:

- Crossways
- Sussex Road
- Field Lane.

The tables overleaf provide the mean and 85th percentile speeds at the survey locations for differing time periods over the weekday and weekend in either direction between Thursday 10th November- Friday 18th November.

Table 2 and **Table 3** provide details from the survey undertaken on Crossways. **Table 4** and **Table 5** provide details from the survey undertaken on Sussex Road. **Table 6** and **Table 7** provide details from the survey undertaken on Field Lane.

Recorded speeds on Crossways

Recorded data indicates that the 'All-day' and 'School Period' 85th percentile speeds along Crossways were 2-3mph above the 20mph speed limit during the weekday and 3-4mph above the speed limit during the weekend. The highest 85th percentile speeds were seen between Midnight - 7am during the weekday and weekend, with speeds of 5mph above the limit for both.

Result indicate that further speed reduction measures would be beneficial along Crossways, particularly as 85th percentile speeds exceed the posted limit during school hours.

	Weekday				Weekend			
	Mean Speed (mph)		85TH Percentile Speed (mph)		Mean Speed (mph)		85TH Percentile Speed (mph)	
Mean Speed (mph)	**West**	**East**	**West**	**East**	**West**	**East**	**West**	**East**
Midnight - 7am	18	16	25	22	21	20	25	22
7am-9am	16	16	22	20	20	18	22	20
10am-3pm	18	18	23	23	19	19	23	23
4pm-6pm	18	18	23	22	18	18	23	22
8pm-Midnight	20	19	24	23	20	19	24	23
8am – 3.30pm (School Period)	17	17	22	22	-	-	-	-

Table 2. Crossways Speed Survey Data Time Period – Thursday 10th Nov – Friday 18th Nov 2022

	Weekday				Weekend	
	All-day		School Period 8am – 3.30pm		All-day	
	West	**East**	**West**	**East**	**West**	**East**
Mean Speed (mph)	17	18	17	17	19	19
85th Percentile Speed (mph)	23	22	22	22	24	23
95th Percentile Speed (mph)	25	24	25	24	28	25
Top Speed (mph)	33	32	33	32	31	30
% Above ACPO enforcement speed	9	7	8	7	17	9
Percentage above speed limit	32	29	25	28	45	40

Table 3. Crossways Speed Survey Data Summary – Thursday 10th Nov – Friday 18th Nov 2022

Recorded speeds on Sussex Road

Recorded data indicates that the 'All-day' and 'School Period' 85th percentile speeds along Sussex Road were at or within 1-2mph of the 20mph speed limit during both the weekday and weekend. The 85th percentile speeds Northbound were consistent throughout the day. The highest speeds southbound were between 4pm and midnight, on both a weekday and weekend.

	Weekday				Weekend			
	Mean Speed (mph)		85TH Percentile Speed (mph)		Mean Speed (mph)	85TH Percentile Speed (mph)		
Mean Speed (mph)	South	North	South	North	South	North	South	North
Midnight - 7am	11	16	12	20	16	15	12	20
7am-9am	12	16	15	19	13	15	15	19
10am-3pm	14	16	18	20	16	17	18	20
4pm-6pm	15	16	19	19	15	18	19	19
8pm-Midnight	16	16	19	19	14	17	19	19
8am – 3.30pm (School Period)	14	16	18	20	-	-	-	-

Table 4. Sussex Road Speed Survey Data Time Period – Thursday 10th Nov – Friday 18th Nov 2022

	Weekday				Weekend	
	All-day		School Period 8am – 3.30pm		All-day	
	South	North	South	North	South	North
Mean Speed (mph)	14	16	14	16	16	16
85th Percentile Speed (mph)	19	20	18	20	19	20
95th Percentile Speed (mph)	21	22	20	22	22	22
Top Speed (mph)	27	28	24	28	25	29
% Above ACPO enforcement speed	1	1	0	1	1	2
Percentage above speed limit	7	12	5	12	9	18

Table 5. Sussex Road Speed Survey Data Summary – Thursday 10th Nov – Friday 18th Nov 2022

Recorded speeds on Field Lane

Table 6 and **Table 7** indicate that the 85th percentile speeds along Field Lane were within the 40mph speed limit at all times. The highest 85th percentile speeds were seen between midnight and 7am on both weekdays and weekends, with 85th percentiles speeds of 38mph Eastbound and 39mph Westbound.

	Weekday				Weekend			
	Mean Speed (mph)		85TH Percentile Speed (mph)		Mean Speed (mph)		85TH Percentile Speed (mph)	
Mean Speed (mph)	**East**	**West**	**East**	**West**	**East**	**West**	**East**	**West**
Midnight - 7am	32	34	38	39	32	34	38	39
7am-9am	29	24	36	34	33	34	36	34
10am-3pm	31	30	36	36	32	32	36	36
4pm-6pm	28	29	33	34	30	31	33	34
8pm-Midnight	32	32	37	37	31	32	37	37
8am – 3.30pm (School Period)	30	27	35	35	-	-	-	-

Table 6. Field Lane Speed Survey Data Time Period – Thursday 10th Nov – Friday 18th Nov 2022

	Weekday				Weekend	
	All-day		School Period 8am – 3.30pm		All-day	
	East	**West**	**East**	**West**	**East**	**West**
Mean Speed (mph)	30	28	30	27	31	32
85th Percentile Speed (mph)	35	36	35	35	37	38
95th Percentile Speed (mph)	38	38	38	38	40	41
Top Speed (mph)	61	82	60	66	51	62
% Above ACPO enforcement speed	0	0	0	0	1	1
Percentage above speed limit	2	2	2	2	5	7

Table 7. Field Lane Speed Survey Data Summary – Thursday 10th Nov – Friday 18th Nov 2022

3.7 Average Daily Traffic Flows

Traffic flow data was also collected at the same three survey positions as the speed surveys, between Thursday 10th November - Friday 18th November 2022, with the following average daily flows as summarised in **Table 8.**

	Crossways			Sussex Road			Field Lane		
Direction of Travel	**East**	**West**	**Total**	**North**	**South**	**Total**	**East**	**West**	**Total**
Average	235	279	**514**	163	79	**242**	2,520	2,602	**5,121**
Average Weekday	262	316	**578**	193	82	**275**	2,859	2,894	**5,752**
Average Weekend	154	171	**324**	80	73	**152**	1,539	1,803	**3,342**

Table 8. Badger Hill - Traffic Flow Summary

In summary, recorded traffic flow data suggests that average total two-way weekly traffic flows are 514 vehicles along Crossways, 242 vehicles along Sussex Road and 5,121 along Field Lane. The weekday only averages give are slightly higher, with 578 vehicles on Crossways, 275 vehicles on Sussex Road and 5,752 vehicles on Field Lane.

As suspected by the nature of the streets, traffic flows are significantly higher on Field Lane in comparison with Sussex Road and Crossways that are considered quiet streets.

The recorded traffic flow data also indicates higher average traffic flows on both weekdays and weekends in the westerly direction along Field Lane and Crossways, and a northerly direction along Sussex Road.

3.8 Recorded Personal Injury Collision Data

Recorded Personal Injury Collision data was also obtained for the study area for the most recently available 60-month period, between the 01/08/2017 and 31/07/2022. As shown in **Figure 20** below, in total there has been three recorded incidents within the study area within the most recent 60-month period – two slight and one serious - all occurring on Field Lane in the vicinity of Sussex Road.

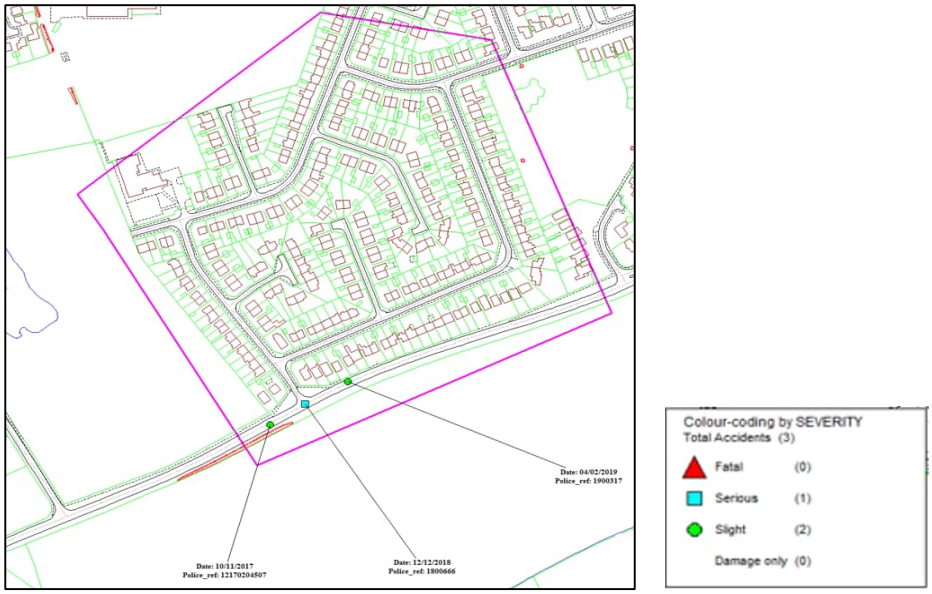


Figure 20. Badger Hill – Accident Data 01/08/2017 and 31/07/2022

The first recorded collision took place on 10/11/2017 and was considered slight in severity. The incident was between a pedestrian and a moving vehicle due likely to a failure of both to judge the others speed and / or possible the pedestrian was in a hurry.

The second recorded collision took place on 12/12/2018 and was considered serious in severity. This was between a pedal cycle and a moving vehicle, likely due to both the vehicle and pedestrian failing to look properly.

The third incident took place on 04/02/2019 and was considered slight in severity. This was between 3 motor vehicles, likely due to the rear most vehicle failing to look properly.

In summary, whilst the recorded personal injury collision data does not suggest any significant pattern, it does indicate that a controlled crossing of Field Lane in the vicinity of the junction with Sussex Road would be beneficial to reduce any further incidents between pedestrians / cycles and motor vehicles.

4. Preliminary Design

4.1 Overview

Based on the findings of the site visit and following subsequent agreement with CYC at the design workshop of 27th February 2023, four concept design proposals were instructed to be progressed to preliminary design, providing a range of options of varying magnitudes of engineering intervention and resulting costs / benefit. The options considered were as follows:

- **Option 1** – Do Minimum
- **Option 2** – Do Minimum Plus
- **Option 3** – Medium Cost
- **Option 4** – High Cost.

4.2 Option Summary

Informed by survey data, **Table 9** below provides a summary of the preliminary design scheme option proposals, with associated design drawings provided in **Appendix A**.

Option 1 – Do minimum	Option 2 – Low Cost	Option 3 – Medium Cost	Option 4 – High Cost
• Replacement of existing and Introduction of additional bollards to prevent verge side parking; • Sections of low-level fencing around School Entrance junction to encourage crossing at existing uncontrolled crossing locations. • 1057 markings / school markings / 2D speed tables and additional signage. • Additional 'School slow down' signage.	*All relevant do minimum interventions plus;* • Resurfaced raised table / red additive to further deter parking. • Resurfaced footways and tactile renewal. • Relocation of northern arm crossing at School Entrance junction. • Additional fencing along northeast corner of School Entrance junction.	*All relevant do low-cost interventions plus;* • Extension of existing raised table; • Formalisation of crossings at the junction over Sussex Road / Crossways (Zebra). • Widened footway (2.5m) linking to park along Crossways / Deramore Drive West • Additional crossing over Sussex Road between Bishopsway and Brentwood Crescent (Zebra).	*All relevant do medium cost interventions plus;* • Widened footway (2.5m) of Sussex Road western footway to proposed Field Lane crossing. • Additional crossing over Sussex Road between Bishopsway and Brentwood Crescent (Zebra). • Additional signalised Parallel Crossing of Field Lane.

Table 9. Badger Hill - Traffic Flow Summary

4.3 Enhanced crossing provision at the school entrance

A key aspect of the concept and preliminary design process has been to improve crossing provision in the vicinity of the school entrance. Intervention measures have been specifically targeted at reducing the likelihood of vehicles parking during drop off / collection periods and enhancing provision on key crossing desire lines at the school entrance junction with Sussex Road/Crossways.

Surveys at the school entrance junction suggest that pedestrian/cycle crossing movements are highest across the mouth of the school entrance (north side) and on Crossways east and

west of the school entrance. Limited pedestrian/cycle crossing movements were recorded across Sussex Road (south side), in part due to observed diagonal movements across the junction.

In response to the above, scheme proposals within Options 3 and 4 by arm of the junction are summarised below:

- **Western arm** (north-south crossing of Crossways) – inclusion of a controlled Zebra crossing serving this existing desire line with associated zig-zag markings to deter parking.
- **Eastern arm** (north-south crossing of Crossways) – broadly retained existing provision, updating the tactile paving provision and guiding users to the crossing through low level fencing. It is recognised that this crossing cannot be formalised (Zebra) due to the spatial constraints associated with adjacent driveways.
- **Southern arm** (east-west crossing of Sussex Road) - inclusion of a controlled Zebra crossing with associated zig-zag markings to deter parking. In addition to deterring parking at the junction, the inclusion of a controlled crossing in this location is anticipated to service latent demand which is not currently realised due to diagonal crossing movements. The proposal to introduce low-level fencing around the junction will prevent/restrict the likelihood of the existing diagonal crossing movements and guide pedestrians to official crossing points on the southern, eastern and western arms.
- **Northern arm** (east-west crossing of school entrance) – broadly retained existing provision, updating the tactile paving provision, increasing the extents of the raised table, and guiding users to the crossings on Crossways through low level fencing. This crossing does not form part of the highway boundary beyond the back of footway.

5. High Level Cost Estimates

5.1 Overview

Reflecting the preliminary stage of design, high level cost estimates for each option are provided in **Table 10** below. It can be seen that cost estimates range from £82K to £766K depending on the level of intervention.

Option	Preliminary Cost Estimate
1	£82,000
2	£195,000
3	£476,000
4	£766,000
Parallel Crossing – Field Lane (Stand-alone cost)	£207,000

Table 10. Summary of Option 1–4 Cost Comparison

The above preliminary design stage cost estimates include individual preliminaries; design and development costs; and risk contingencies that are reflected in the cost summaries provided in **Appendix B**.

As highlighted further within Section 8 of this document, the proposed signal controlled parallel crossing included within Option 4 provides a significant benefit in relation to safety for pedestrians and cyclists at the Sussex Road / Field Lane junction. As such, an individual cost estimate for the stand-alone crossing has been provided should CYC wish to incorporate this element in any other option.

5.2 Statutory Undertakers Equipment

There are a high number of utilities (statutory undertakers equipment) within the study area. As such, additional uplifts associated with this risk have been applied within the above cost estimates. At preliminary design stage it is difficult to assess the impact on existing utilities without further C3 information and GPR investigation (if required).

Due to the concrete slab paving, a high number of utilities are indicated to be located within the footway, where widening is proposed in Options 3 & 4. As such, additional utility related cost uplifts have been applied in Option 3 & 4 where significant works to the footway are proposed.

Whilst considered unlikely due to the proposed widening of the footway, it should be noted that at detailed design stage the cost utilities may increase significantly if, following further site investigation, diversions are required.

If costs associated with utilities are significantly high enough to prevent the options progressing, widening could be omitted from the design. However, this will have resulting impacts to the benefits associated with wider footways within the audit criteria.

6. Design Feature Variables

6.1 Overview

Due to the location of Badger Hill Primary School, accessed to / from residential streets with limited available green space and a significant number of driveways, there are limited opportunities to provide public realm features.

However, there are a small number of potential public realm variables set out in this chapter. These can be either bespoke single item features or more function based higher production products, with a number of lower or higher cost alternatives, with varying aesthetic and functional attributes.

On this basis, whilst a select number of public realm features have been included within the proposals, they are intended to inform and enable discussions with key stakeholders and can be interchangeable between scheme options. Design feature variables are not limited to the examples shown within this document and a further detailed study of variable design features should be undertaken once a single option is selected for progression to detailed design.

The main design feature variables considered in this chapter consist of the following:

- Planting
- Benches and scooter / cycle parking
- Parklets and play features.

6.2 Planting

Two additional trees are proposed within the study area, on an area of wide verge. However, there are also opportunities to replace existing verge areas with low level planting. In addition to visual benefits, planting increases the wildlife habitat through enhanced green space and could provide a green buffer for pedestrians from the carriageway.

An additional option would be to allow pupils to assist with planting and maintenance throughout the seasons; this would offer engagement for Badger Hill Primary School children.

An approximate cost for low level planting is between £20 to £50 per linear m^2 dependant on proposed density and plant specification. Low level planting will also require additional on-going maintenance.

The option of raised planting beds has not been accounted for within the initial designs, but could be considered at detailed design stage at wider areas of verge if appropriate.

6.3 Birdsmouth Fencing

Birdsmouth fencing is proposed at the Crossways / Sussex Road junction to guide pedestrians to formal crossing locations. Birdsmouth fencing is considered an aesthetically pleasing and unobtrusive option, as shown in the example in **Figure 21**. However, alternative fence heights, styles and materials are available should CYC wish to incorporate into the final design.

Figure 21. Example Birdsmouth Fencing (sawmill timber)

6.4 Play Features

Additional play features have not been accounted for within the proposal due to the public Badger Hill Park located approximately 350m walking distance to the northeast on Deramore Drive West.

However, should CYC wish to enhance the play equipment provision at the park there are a significant number of variable play feature options that could be considered at the next stage of design. **Figure 22** below provides an indication of potential options at different costs.

High Cost : ~£12,000 (Grass Install)

Medium Cost : ~£8,000 (Grass Install)

Low Cost: ~£6,000 (Grass Install)

Figure 22. Differing cost play features

7. Parking & TRO Options

7.1 Overview

Local authorities in the UK have power under the Road Traffic Regulation Act 1984 (S1 and S6-9) to regulate traffic and restrict access to avoid danger to persons or other traffic using the road; to facilitate the passage on the road of any class of traffic including pedestrians; and to prevent the use of a road by vehicular traffic where such use is inappropriate given the street context.

Typically, 'school streets' implemented across the UK aim to restrict access to the street outside the main entrance of the school for between 30-45 minutes at the beginning and end of the school day. This is typically enforced with the use of retractable or collapsible bollards, which are manned and operated by a member of school staff or Automatic Number Plate Recognition (ANPR) cameras. ANPR cameras will enforce restrictions through issuing fixed penalty notices to any vehicle entering the zone who are not exempt.

However, as outlined in the Project Initiation Document and through discussion with CYC, restrictions to access and amendments to the existing residential parking zone are excluded from the project scope. As such, options to restrict parking rather than access have not been explored in order to meet the objectives relating to the reduction of parking impact at school drop off / pick-up times.

Increasing the use of TROs, in particular around the school entrance, would help target a reduction in issues relating to on-street parking during no parking time-periods, as well as making fewer spaces available, encouraging parents/carers and school children to use active modes as their form of transport. As such, the following section provides potential alternative options in order to reduce / restrict parking within the study area should changes to the ResPark zone be considered in the future.

7.2 Double and single yellow markings

Parking restrictions along Crossways / Sussex Road currently consist of ResPark zone and double yellow line restrictions at junctions. Implementation of further single and double yellow line markings (no loading) would create restrictions within those areas currently used by none-residents during the 10-minute grace period. These time periods are able to coincide with school drop-off and pick-up, with restrictions displayed on signage along the footway, or at entry signs to the controlled parking zone (between gateway features). This option is likely to require a form of enforcement to ensure visitors, residents and parents are complying with the TRO's measures. Enforcement could include the employment of a Civil Enforcement Officer to monitor illegal parking occurrences.

Typically, any restriction of parking between particular time periods along residential streets are likely to have some local opposition from some residents. However, residential properties within the study area have private driveways; therefore, further on-street restrictions may also be welcomed.

Figure 23. Example of single yellow line restriction

7.3 Permit holder parking

Another possibility to restrict parking would be to remove the 10-minute grace period or have permit holders only parking, providing single yellow markings where possible to indicate where permit holder parking is appropriate, with restrictions displayed at entry signs to the controlled parking zone (between gateway features), or along the full length of the study area. This would result in a potential reduction in parking outside of the school when compared to the existing 10-minute grace period.

It is recognised that this type of restriction may be difficult to enforce without Civil Enforcement. Some residents are also still likely to oppose due to the reduced level of parking, particularly for those who may lose parking spaces outside of their property if used in conjunction with further extension of double yellow markings.

Figure 24. Example of parking zone signage

8. Existing & Proposed Audits

8.1 Overview

Three types of audits on both the existing and proposed layouts have been undertaken as part of the design process, namely:

- **LTN 1/20 – Guidance Assessment** (protection for cyclists and crossing suitability)
- **LTN 1/20 Cycle Level of Service** - Existing and proposed layouts
- **Badger Hill School Street Audit** - Existing and proposed Option 1 – 4 layouts.

Full audit outputs are provided at **Appendix D**.

8.2 LTN 1/20 – Guidance Assessment

8.2.1 LTN 1/20 Protection for Cyclists

Recorded traffic flow data indicates that average two-way average 24 hour weekday and weekend traffic flows are 578 and 324 vehicles respectively along Crossway; 275 and 152 respectively along Sussex Road; and 5,752 and 3,342 respectively along Field Lane. Based on LTN 1/20 guidance as per the extract provided below as **Figure 25**, Field Lane would require segregation in order to be 'suitable for most people'. The shared-use southern footway currently provides this segregation from motor vehicle traffic.

In comparison, **Figure 25** indicates that Crossways and Sussex Road are both suitable to provide a mixed traffic environment 'suitable for most people'. Notwithstanding, and to increase conspicuity of cyclists within the carriageway, Diagram 1057 cycle markings are proposed along with additional signage and potentially 'virtual' speed tables via road markings to encourage slower vehicle speeds. Furthermore, proposed footway widening included in Options 3 and 4 will provide enhanced provision for school children scootering within the footway on Crossways and Sussex Road.

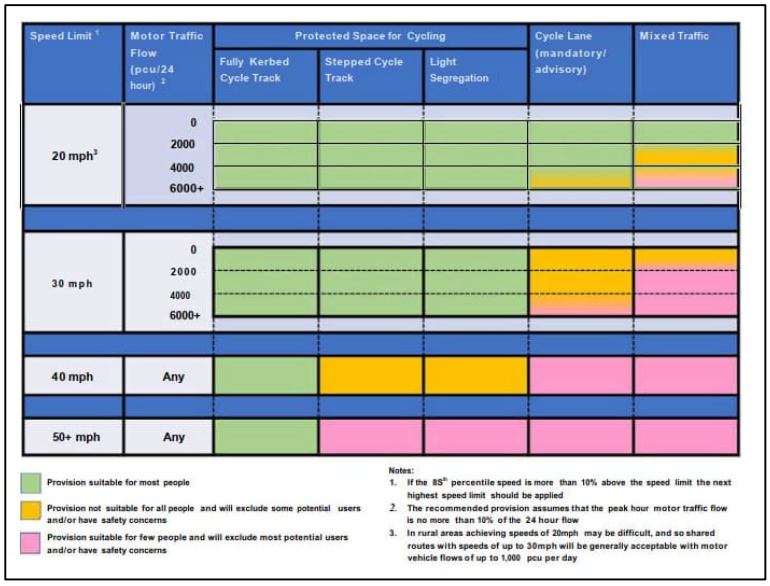


Figure 25. LTN 1/20 – Appropriate Protection from Motor Traffic

8.2.2 LTN 1/20 Crossing Suitability

The traffic flows along Crossways are within the 0-4,000 PCU bracket, for a speed limit of <30mph and crossing 2 lanes Based on **Figure 26** below - extracted from LTN 1/20 guidance – this indicates that any crossing of Crossways would require cycle priority crossing or greater facility to be 'suitable for most people'.

The levels of traffic flow along Sussex Road are also within the 0-4,000 PCU bracket, for a speed limit of <30mph and crossing 2 lanes. Again, based on **Figure 26** below, the data indicates that any crossing of Sussex Road would require cycle priority crossing or greater facility to be 'suitable for most people'.

The levels of traffic flow along Field Lane are within the 0-6,000 PCU bracket, for a speed limit of 40mph and crossing 2 lanes. Based on the **Figure 26** below, the data indicates that any crossing of Field Lane would require a signal controlled crossing or greater facility to be 'suitable for most people'.

Table 10-2: Crossing design suitability

Speed Limit	Total traffic flow to be crossed (pcu)	Maximum number of lanes to be crossed in one movement	Uncontrolled	Cycle Priority	Parallel	Signal	Grade separated
≥ 60mph	Any	Any					
40 mph and 50 mph	> 10000	Any					
	6000 to 10000	2 or more					
	0-6000	2					
	0-10000	1					
≤ 30mph	> 8000	> 2					
	> 8000	2					
	4000-8000	2					
	0-4000	2					
	0-4000	1					

Provision suitable for most people

Provision not suitable for all people and will exclude some potential users and/or have safety concerns

Provision suitable for few people and will exclude most potential users and/or have safety concerns

Notes:
1. If the actual 85th percentile speed is more than 10% above the speed limit the next highest speed limit should be applied
2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24 hour flow

Figure 26. LTN 1/20 - Crossing design suitability

It is recognised that preliminary design scheme proposals do not currently include priority cycle crossings of either Sussex Road or Crossways. This is because cyclists are considered to be on-street due to low traffic volumes and speeds as set out in Section 8.2.1 above. However, Option 4 does propose a signalised crossing of Field Lane, linking the existing shared-use southern footway to an on-street quiet route of Sussex Road via cycle on / off facilities.

It is noted that the proposed signalised crossing of Field Lane could be incorporated within any option as an addition to help address the existing safety issue. However, has been costed only within the high-cost Option 4 at present.

8.3 LTN 1/20 Cycle Level of Service

The LTN 1/20 Cycle Level of Service framework comprises of five key requirements (cohesion, directness, safety, comfort and attractiveness) and a total of 25 sub-criteria. Each of the sub-criteria is scored 0 (red), 1 (amber) or 2 (green) reflecting the level of provision, resulting in a maximum potential score of 50. Five of the 25 sub-criteria are classed as 'critical fails', with all five falling in the safety theme. Critical fails relate to inadequate width for cycling in mixed traffic lanes, or adjacent to parking/loading; excessive motor traffic volumes for cyclists to be mixed in with general traffic; and speeds of motor traffic >37mph.

The results of the LTN 1/20 Cycle Level of Service are as follows:

- The existing provision falls below the 70% pass threshold at 52% with one critical fails, associated with uncontrolled crossing of Field Lane for cyclists.
- Options 1, 2 & 3 also continue to fall below the threshold, scoring 60%, 62% and 62% respectively. Improvements to signage, markings and road surfacing slightly increase scores compared to existing. However, crossing of Field Lane in an uncontrolled manor continues to impact negatively with a critical fail.
- In comparison, Option 4 passes the threshold, scoring 72% with no critical fails through inclusion of a proposed signalised Parallel Crossing of Field Lane.

It is noted that the initial instruction included within the PID scope stated the following:

'Consideration of LTN 1/20 guidance. 'Green' scoring solutions are preferred, however lower scoring solutions that still represent an improvement [on existing] will be explored.' It also stated a requirement for the *'consideration of link between the school entrance and existing off carriageway cycle lane provision on Field Lane.'*

As such, a proposed signalised pedestrian/cycle parallel crossing of Field Lane near the junction with Sussex Road has been included within the 'High Cost' option, reflecting the hierarchical approach. That said, and recognising that the existing uncontrolled crossing on Field Lane represents a critical (safety related) failure, the inclusion of the proposed signalised pedestrian/cycle parallel crossing at Field Lane should be considered as a potential addition to all options, should CYC consider this appropriate and within budget.

8.4 School Street Audit

Recognising that the Badger Hill project is not a typical 'School Streets' proposal that aims to limit access during peak periods, the 'Badger Hill School Street Audit' is a project specific appraisal matrix, produced by AECOM and approved for use by CYC within the previous 'School Streets' projects. It takes a mainly infrastructure-based approach but draws guidance from LTN 1/20, Healthy Streets, School Streets and 'Streets 4 All' appraisal methodologies. It has 21 criteria, with 7 key indicators, which comprise:

- Cyclists and children cycling / scootering on footways
- Pedestrians / children
- General traffic
- Environmental.
- Cost
- Buildability
- Badger Hill outlined objectives including; public realm / connection to existing park, crossing visibility and parking on verges.

The purposes of this additional audit tool is to consider a more rounded / overarching approach, that reflects the wider project aims and objectives. Scores of between 0-59% are considered red, 60-70% amber and 70-100% green.

The results of the Badger Hill School Street Audit are as follows:

- The existing provision scored red - 36%
- Option 1 scored red - 52%
- Option 2 scored red - 57%
- Option 3 scored amber - 67%.
- Option 4 scored green - 74%

The existing layout scores particularly low in safety for children, cyclist safety, public realm and general traffic indicators, with a red score.

Options 1 and 2 score particularly well in cost and limited impact on statutory undertakers. However, continue to have a red score due to limitations on children cycling / scootering on footways, no public realm enhancements / engagement for children, no additional TRO's / reduced parking and safety for crossing cyclists and pedestrians at Field Lane.

Option 3 adds further benefit for children cycling / scootering on footways, links to the existing park area and formalisation of crossings outside of the school, scoring an amber rating. Elements such as impact on statutory undertakers; loss of verge space; limited additional public realm enhancements / engagement for children; no additional TRO's / reduced parking; and no safety improvements for cyclists and pedestrians crossing at Field Lane impact the score negatively.

In comparison, Option 4 scores a green rating with the inclusion of the proposed signalised crossing of Field Lane and additional benefit for children cycling / scootering on footways through further widening.

Due to aforementioned constraints associated with concrete block paving, limitations on changes to TRO's and limited opportunities for enhanced public realm due to lack of available space / residential driveways are all reflected within the lower overall scores.

However, it should be noted that whilst Options 1 and 2 score a red rating, they do offer a benefit in comparison to the existing layout, particularly associated with visibility issues, parking prevention on verges and resulting safety for school children directly outside of Badger Hill Primary School.

Full school street audit results are provided in **Appendix C**.

9. Summary and Next Steps

9.1 Summary

A hierarchy of scheme options with differing levels of intervention have been developed to preliminary design level along with an associated magnitude of cost estimates.

The four options are:

- **Option 1** – Do minimum
- **Option 2** – Low Cost
- **Option 3** – Medium Cost
- **Option 4** – High Cost.

The four options are considered to offer realistic civil infrastructure measures that meet the initial project objectives, considering site constraints / limitations associated with changes to the existing ResPark TRO, concrete slab paving and residential driveways.

All options provide a benefit in comparison to the existing layout, with significant improvements to safety at existing crossing points and limiting the impact of parked vehicles on verges, in particular near to the school entrance and crossing locations.

The hierarchy of cost and infrastructure proposals included within the options is reflected within the resulting audit scores and benefit in relation to initial project objectives and to enable informed decision making.

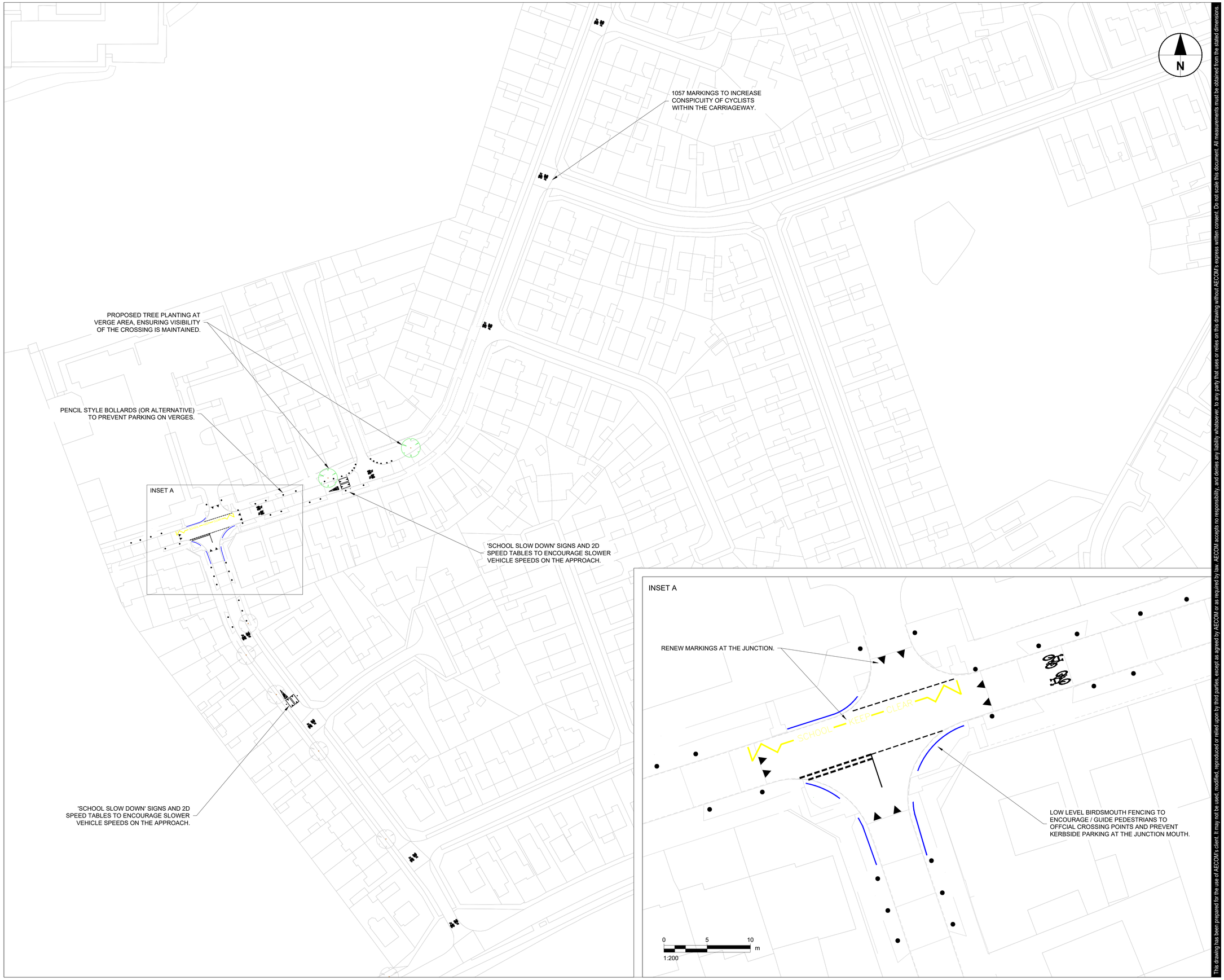
9.2 Next Steps

Key next steps are considered to be:

- Present the four proposed options to Elected Members for a decision on how to proceed
- Undertake local consultation as required
- Assuming agreement of a preferred option and secured funding, progress to the next stage of design (Workstage 4 from Section 1.5).

Appendix A - 4no. Preliminary Designs

ISO A1 594mm x 841mm
Project Management Initials:
Revision:
Designer: OG
Checked: LO
Approved: NB
Drawn: OG



Last saved by: ODDYL (2023-04-06) Last Plotted: 2023-04-14
Filename: 60696107-ACM-000-ZZ-DR-TR-0002.dwg

AECOM

PROJECT

CYC CB120 Badger Hill Primary School 'People Streets'

CLIENT

CITY OF YORK COUNCIL

CONSULTANT

AECOM Limited
1st and 5th Floor
City Walk
Leeds, LS11 9AR
T:+44-113-301-8400
www.aecom.com

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. DRAWINGS BASED ON TOPOGRAPHICAL SURVEY INFORMATION SUPPLIED BY CYC.
3. ROAD MARKINGS AND TRAFFIC SIGN LOCATIONS ARE INDICATIVE AT PRELIMINARY DESIGN STAGE AND WILL BE REVIEWED AT DETAIL DESIGN.
4. ROAD MARKINGS AND TRAFFIC SIGNS WILL BE DESIGNED IN ACCORDANCE WITH TSRGD 2016, ITS SUBSEQUENT AMMENDMENTS AND TSM GUIDANCE.
5. EXISTING STATUTORY UNDERTAKER'S APPARATUS IS SHOWN ON DRAWING SHEETS INDICATED ON DRAWING 60696107-ACM-2700-ZZ-DR-TR-0001. THERE MAY BE ADDITIONAL UTILITIES PRESENT THAT ARE NOT IDENTIFIED ON THIS AND ASSOCIATED DRAWINGS.
6. THIS MAP CONTAINS ORDNANCE SURVEY MATERIAL WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE © CROWN COPYRIGHT. UNAUTHORISED REPRODUCTION INFRINGES CROWN COPYRIGHT AND MAY LEAD TO PROSECUTION OR CIVIL PROCEEDINGS. CYC LICENCE NUMBER 100020818, 2022.
7. AECOM WILL NEED TO BE INFORMED OF ANY ADDITIONAL KNOWN ISSUES THAT MAY IMPACT PROPOSALS PRIOR TO DETAILED DESIGN.

KEY

- PROPOSED UNCONTROLLED TACTILE PAVING
- PROPOSED FENCING
- PROPOSED BOLLARD
- PROPOSED SIGN
- PROPOSED WHITE MARKINGS
- PROPOSED YELLOW MARKINGS

ISSUE/REVISION

PO1	17/04/23	FIRST ISSUE
I/R	DATE	DESCRIPTION

ISSUE PURPOSE / SUITABILITY

PRELIMINARY DESIGN ISSUE

PROJECT NUMBER

60696107

SHEET TITLE

BADGER HILL PRIMARY SCHOOL
OPTION 1
LOW COST INTERVENTIONS

SHEET NUMBER

60696107-ACM-000-ZZ-DR-TR-0002

ISO A1 594mm x 841mm
Scale: 1:200

Project Management Initials:
Revision:
Designer: OG
Checked: LO
Approved: NB
Drawn: OG

AECOM

PROJECT

CYC CB120 Badger Hill Primary School 'People Streets'

CLIENT

CITY OF YORK COUNCIL

CONSULTANT

AECOM Limited
1st and 5th Floor
City Walk
Leeds, LS11 9AR
T:+44-113-301-8400
www.aecom.com

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. DRAWINGS BASED ON TOPOGRAPHICAL SURVEY INFORMATION SUPPLIED BY CYC.
3. ROAD MARKINGS AND TRAFFIC SIGN LOCATIONS ARE INDICATIVE AT PRELIMINARY DESIGN STAGE AND WILL BE REVIEWED AT DETAIL DESIGN.
4. ROAD MARKINGS AND TRAFFIC SIGNS WILL BE DESIGNED IN ACCORDANCE WITH TSRGD 2016, ITS SUBSEQUENT AMMENDMENTS AND TSM GUIDANCE.
5. EXISTING STATUTORY UNDERTAKER'S APPARATUS IS SHOWN ON DRAWING SHEETS INDICATED ON DRAWING 60696107-ACM-2700-ZZ-DR-TR-0001. THERE MAY BE ADDITIONAL UTILITIES PRESENT THAT ARE NOT IDENTIFIED ON THIS AND ASSOCIATED DRAWINGS.
6. THIS MAP CONTAINS ORDNANCE SURVEY MATERIAL WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE © CROWN COPYRIGHT. UNAUTHORISED REPRODUCTION INFRINGES CROWN COPYRIGHT AND MAY LEAD TO PROSECUTION OR CIVIL PROCEEDINGS. CYC LICENCE NUMBER 100020818, 2022.
7. AECOM WILL NEED TO BE INFORMED OF ANY ADDITIONAL KNOWN ISSUES THAT MAY IMPACT PROPOSALS PRIOR TO DETAILED DESIGN.

KEY

- PROPOSED UNCONTROLLED TACTILE PAVING
- PROPOSED FENCING
- PROPOSED BOLLARD
- PROPOSED SIGN
- PROPOSED WHITE MARKINGS
- PROPOSED YELLOW MARKINGS
- PROPOSED FOOTWAY
- PROPOSED COLOURED SURFACING

ISSUE/REVISION

PO1	17/04/23	FIRST ISSUE
I/R	DATE	DESCRIPTION

ISSUE PURPOSE / SUITABILITY

PRELIMINARY DESIGN ISSUE

PROJECT NUMBER

60696107

SHEET TITLE

BADGER HILL PRIMARY SCHOOL
OPTION 2
LOW COST PLUS INTERVENTIONS

SHEET NUMBER

60696107-ACM-000-ZZ-DR-TR-0003

Last saved by: ODDYL (2023-04-06) Last Plotted: 2023-04-14
Filename: 60696107-ACM-000-ZZ-DR-TR-0003.dwg

ISO A1 594mm x 841mm
Scale: 1:200 @ A1

Project Management Initials:
Revision:
Designer: OG
Checked: LO
Approved: NB
Drawn: OG

1057 MARKINGS TO INCREASE CONSPICUITY OF CYCLISTS WITHIN THE CARRIAGEWAY.

PROPOSED TREE PLANTING AT VERGE AREA, ENSURING VISIBILITY OF THE CROSSING IS MAINTAINED.

PROPOSED ZEBRA CROSSING, FACILITATING MOVEMENTS TO / FROM BADGER HILL PRIMARY SCHOOL AND THE PARK OF DERAMORE DRIVE WEST.

PENCIL STYLE BOLLARDS (OR ALTERNATIVE) TO PREVENT PARKING ON VERGES.

INSET A

'SCHOOL SLOW DOWN' SIGNS AND 2D SPEED TABLES TO ENCOURAGE SLOWER VEHICLE SPEEDS ON THE APPROACH.

'SCHOOL SLOW DOWN' SIGNS AND 2D SPEED TABLES TO ENCOURAGE SLOWER VEHICLE SPEEDS ON THE APPROACH.

INSET A

FOOTWAY RESURFACING AND REMOVAL OF VERGED AREAS AT THE JUNCTION TO INCREASE CAPACITY DURING SCHOOL PEAK PERIODS.

ZIG-ZAG MARKINGS EXTENDING ACROSS THE JUNCTION TO PREVENT PARKING.

LOW LEVEL BIRDSMOUTH FENCING TO ENCOURAGE / GUIDE PEDESTRIANS TO OFFCIAL CROSSING POINTS AND PREVENT KERBSIDE PARKING AT THE JUNCTION MOUTH.

RENEW AND EXTEND EXISTING SPEED TABLE, INTRODUCING COLOURED HIGH FRICTION SURFACING TO FURTHER ENHANCE CONSPICUITY AND DISCOURAGE PARKING.

RELOCATION OF EXISTING CROSSING POINTS, INCLUDING FORMALISATION TO CONTROLLED WESTERN AND SOUTHERN CROSSINGS .

0 5 10 m
1:200

Last saved by: ODDYL (2023-04-14) Last Plotted: 2023-04-17
Filename: 60696107-ACM-000-ZZ-DR-TR-0004.dwg

AECOM

PROJECT

CYC CB120 Badger Hill Primary School 'People Streets'

CLIENT

CITY OF YORK COUNCIL

CONSULTANT

AECOM Limited
1st and 5th Floor
City Walk
Leeds, LS11 9AR
T:+44-113-301-8400
www.aecom.com

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. DRAWINGS BASED ON TOPOGRAPHICAL SURVEY INFORMATION SUPPLIED BY CYC.
3. ROAD MARKINGS AND TRAFFIC SIGN LOCATIONS ARE INDICATIVE AT PRELIMINARY DESIGN STAGE AND WILL BE REVIEWED AT DETAIL DESIGN.
4. ROAD MARKINGS AND TRAFFIC SIGNS WILL BE DESIGNED IN ACCORDANCE WITH TSRGD 2016, ITS SUBSEQUENT AMMENDMENTS AND TSM GUIDANCE.
5. EXISTING STATUTORY UNDERTAKER'S APPARATUS IS SHOWN ON DRAWING SHEETS INDICATED ON DRAWING 60696107-ACM-2700-ZZ-DR-TR-0001. THERE MAY BE ADDITIONAL UTILITIES PRESENT THAT ARE NOT IDENTIFIED ON THIS AND ASSOCIATED DRAWINGS.
6. THIS MAP CONTAINS ORDNANCE SURVEY MATERIAL WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE © CROWN COPYRIGHT. UNAUTHORISED REPRODUCTION INFRINGES CROWN COPYRIGHT AND MAY LEAD TO PROSECUTION OR CIVIL PROCEEDINGS. CYC LICENCE NUMBER 100020818, 2022.
7. AECOM WILL NEED TO BE INFORMED OF ANY ADDITIONAL KNOWN ISSUES THAT MAY IMPACT PROPOSALS PRIOR TO DETAILED DESIGN.

KEY

- PROPOSED CONTROLLED TACTILE PAVING
- PROPOSED UNCONTROLLED TACTILE PAVING
- PROPOSED FENCING
- PROPOSED BOLLARD
- PROPOSED SIGN
- PROPOSED WHITE MARKINGS
- PROPOSED FOOTWAY
- PROPOSED BUFFER
- PROPOSED COLOURED SURFACING

ISSUE/REVISION

I/R	DATE	DESCRIPTION
PO1	17/04/23	FIRST ISSUE

ISSUE PURPOSE / SUITABILITY

PRELIMINARY DESIGN ISSUE

PROJECT NUMBER

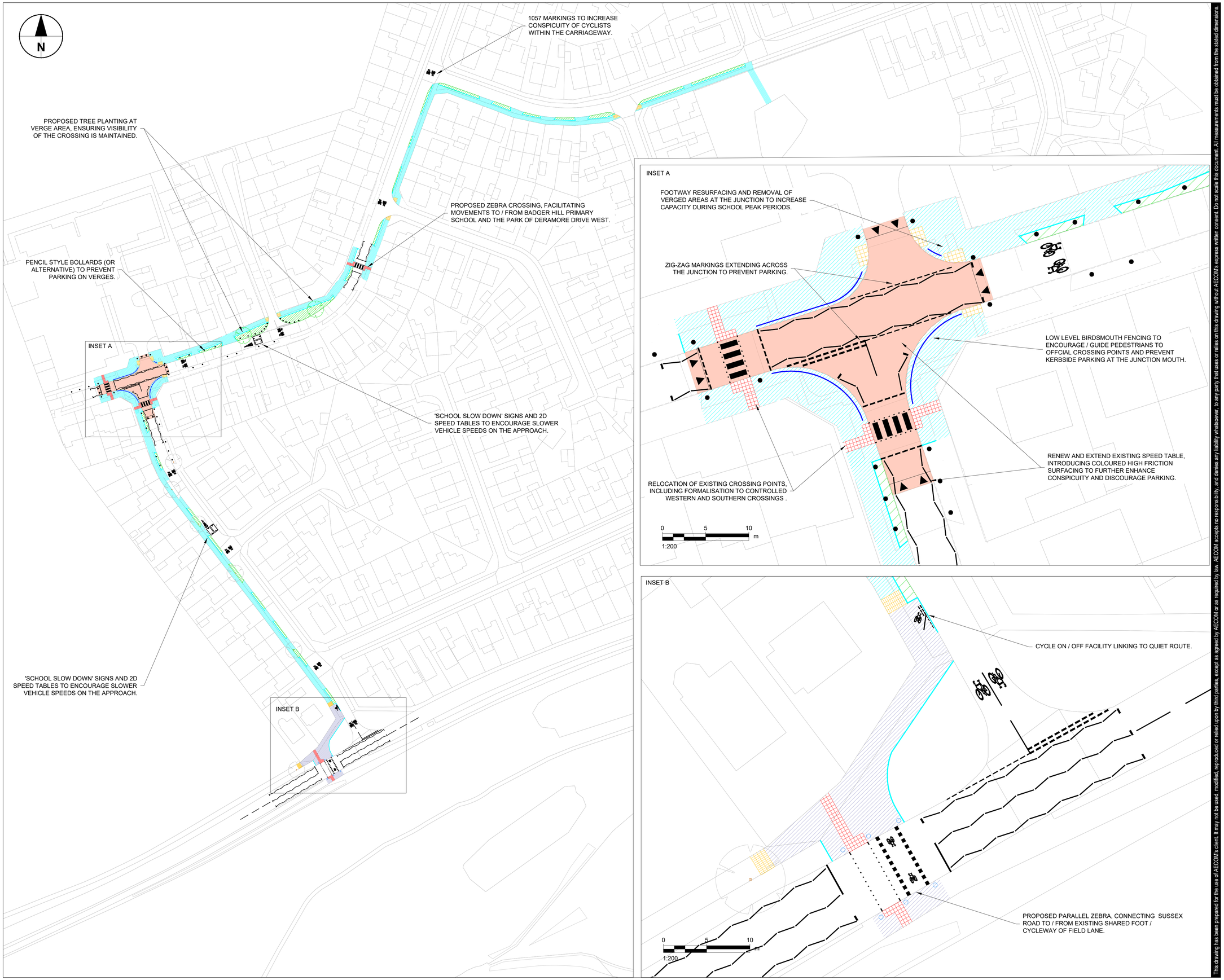
60696107

SHEET TITLE

BADGER HILL PRIMARY SCHOOL
OPTION 3
MEDIUM COST INTERVENTIONS

SHEET NUMBER

60696107-ACM-000-ZZ-DR-TR-0004



AECOM

PROJECT

CYC CB120 Badger Hill Primary School 'People Streets'

CLIENT

CITY OF YORK COUNCIL

CONSULTANT

AECOM Limited
1st and 5th Floor
City Walk
Leeds, LS11 9AR
T:+44-113-301-8400
www.aecom.com

NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
2. DRAWINGS BASED ON TOPOGRAPHICAL SURVEY INFORMATION SUPPLIED BY CYC.
3. ROAD MARKINGS AND TRAFFIC SIGN LOCATIONS ARE INDICATIVE AT PRELIMINARY DESIGN STAGE AND WILL BE REVIEWED AT DETAIL DESIGN.
4. ROAD MARKINGS AND TRAFFIC SIGNS WILL BE DESIGNED IN ACCORDANCE WITH TSRGD 2016, ITS SUBSEQUENT AMMENDMENTS AND TSM GUIDANCE.
5. EXISTING STATUTORY UNDERTAKER'S APPARATUS IS SHOWN ON DRAWING SHEETS INDICATED ON DRAWING 60696107-ACM-2700-ZZ-DR-TR-0001. THERE MAY BE ADDITIONAL UTILITIES PRESENT THAT ARE NOT IDENTIFIED ON THIS AND ASSOCIATED DRAWINGS.
6. THIS MAP CONTAINS ORDNANCE SURVEY MATERIAL WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE © CROWN COPYRIGHT. UNAUTHORISED REPRODUCTION INFRINGES CROWN COPYRIGHT AND MAY LEAD TO PROSECUTION OR CIVIL PROCEEDINGS. CYC LICENCE NUMBER 100020818, 2022.
7. AECOM WILL NEED TO BE INFORMED OF ANY ADDITIONAL KNOWN ISSUES THAT MAY IMPACT PROPOSALS PRIOR TO DETAILED DESIGN.

KEY

- PROPOSED CONTROLLED TACTILE PAVING
- PROPOSED UNCONTROLLED TACTILE PAVING
- PROPOSED FENCING
- PROPOSED BOLLARD
- PROPOSED SIGN
- PROPOSED SIGNAL POLE
- PROPOSED WHITE MARKINGS
- PROPOSED FOOTWAY
- PROPOSED FOOT / CYCLEWAY
- PROPOSED BUFFER
- PROPOSED COLOURED SURFACING

ISSUE/REVISION

I/R	DATE	DESCRIPTION
PO1	17/04/23	FIRST ISSUE

ISSUE PURPOSE / SUITABILITY

PRELIMINARY DESIGN ISSUE

PROJECT NUMBER

60696107

SHEET TITLE

BADGER HILL PRIMARY SCHOOL
OPTION 4
HIGH COST INTERVENTIONS

SHEET NUMBER

60696107-ACM-000-ZZ-DR-TR-0005

Last saved by: ODDYL (2023-04-17) Last Plotted: 2023-05-03
Filename: 60696107-ACM-000-ZZ-DR-TR-0005.dwg

Appendix B - Cost estimate outputs

Block Cost Estimate

Scheme	**Badger Hill**	**Option 1**	
Client:	**CYC**		**April 2023**
Costing Base Year:	2023 - Feb		
Construction Year:	2023 - Dec	Inflation Adjustment Factor (IAF):	100.0%

BASE COST				**Section Costs (£ 2021 rates)**	**Sub Totals (£)**
	Description				
Preliminaries	Construction Costs			£24,068	
	Traffic Signals equipment				
	Contractor Prelims	10%	Sum of Works costs	£2,407	
	Utilities Allowance	20%	Sum of Works costs	£4,814	
	TTM	30%	Sum of Works costs	£9,386	
	Sub Total:				**£40,675**
Scheme Design & Development	Design	50%	Capital costs	£20,337	
	Contract Management	5%	Capital costs	£2,034	
	Site Supervision	5%	Capital costs	£2,034	
	Sub Total:				**£24,405**
RISK					
Risk	Risk Contingency	25%	Sum of Works costs	£16,270	
	Sub Total:				**£16,270**
	Scheme Cost Estimate - Grand Total:				**£81,349**

Block Cost Estimate

Scheme	**Badger Hill**	**Option 2**	
Client:	**CYC**		**April 2023**
Costing Base Year:	2023 - Feb		
Construction Year:	2023 - Dec	Inflation Adjustment Factor (IAF):	100.0%

BASE COST				**Section Costs (£ 2021 rates)**	**Sub Totals (£)**
	Description				
Preliminaries	Construction Costs			£78,915	
	Traffic Signals equipment				
	Contractor Prelims	10%	Sum of Works costs	£7,891	
	Utilities Allowance	20%	Sum of Works costs	£15,783	
	TTM	15%	Sum of Works costs	£15,388	
			Sub Total:		**£117,978**
Scheme Design & Development	Design	25%	Capital costs	£29,494	
	Contract Management	3.5%	Capital costs	£4,129	
	Site Supervision	3.5%	Capital costs	£4,129	
			Sub Total:		**£37,753**
RISK					
Risk	Risk Contingency	25%	Sum of Works costs	£38,933	
			Sub Total:		**£38,933**
			Scheme Cost Estimate - Grand Total:		**£194,663**

Block Cost Estimate

Scheme	**Badger Hill**	**Option 3**	
Client:	**CYC**		**April 2023**
Costing Base Year:	2023 - Feb		
Construction Year:	2023 - Dec	Inflation Adjustment Factor (IAF):	100.0%

BASE COST				**Section Costs (£ 2021 rates)**	**Sub Totals (£)**
	Description				
Preliminaries	Construction Costs			£201,738	
	Traffic Signals equipment				
	Contractor Prelims	10%	Sum of Works costs	£20,174	
	Utilities Allowance	30%	Sum of Works costs	£60,521	
	TTM	10%	Sum of Works costs	£28,243	
	Sub Total:				**£310,677**
Scheme Design & Development	Design	17.5%	Capital costs	£54,368	
	Contract Management	2.5%	Capital costs	£7,767	
	Site Supervision	2.5%	Capital costs	£7,767	
	Sub Total:				**£69,902**
RISK					
Risk	Risk Contingency	25%	Sum of Works costs	£95,145	
	Sub Total:				**£95,145**
	Scheme Cost Estimate - Grand Total:				**£475,724**

Block Cost Estimate

Scheme	**Badger Hill**	**Option 4**	
Client:	**CYC**		**April 2023**
Costing Base Year:	2023 - Feb		
Construction Year:	2023 - Dec	Inflation Adjustment Factor (IAF):	100.0%

BASE COST					**Section Costs (£ 2021 rates)**	**Sub Totals (£)**
	Description					
Preliminaries	Construction Costs				£339,026	
	Traffic Signals equipment					
	Works Contingency	10%	Sum of Works costs		£33,903	
	Utilities Allowance	25%	Sum of Works costs		£84,757	
	TTM	13%	Sum of Works costs		£57,211	
				Sub Total:		**£514,896**
Scheme Design & Development	Design	15%	Capital costs		£77,234	
	Contract Management	2%	Capital costs		£10,298	
	Site Supervision	2%	Capital costs		£10,298	
				Sub Total:		**£97,830**
RISK						
Risk	Risk Contingency	25%	Sum of Works costs		£153,182	
				Sub Total:		**£153,182**
				Scheme Cost Estimate - Grand Total:		**£765,908**

Block Cost Estimate

Scheme	**Badger Hill**	**Parallel Crossing, Field Lane**	
Client:	**CYC**		**April 2023**
Costing Base Year:	2023 - Feb		
Construction Year:	2023 - Dec	Inflation Adjustment Factor (IAF):	100.0%

BASE COST					**Section Costs (£ 2021 rates)**	**Sub Totals (£)**
	Description					
Preliminaries	Construction Costs				£96,547	
	Traffic Signals equipment					
	Works Contingency	5%	Sum of Works costs		£4,827	
	Utilities Allowance	20%	Sum of Works costs		£19,309	
	TTM	20%	Sum of Works costs		£24,137	
				Sub Total:		**£144,821**
Scheme Design & Develop	Design	10%	Capital costs		£14,482	
	Contract Management	2%	Capital costs		£2,896	
	Site Supervision	2%	Capital costs		£2,896	
				Sub Total:		**£20,275**
RISK						
Risk	Risk Contingency	25%	Sum of Works costs		£41,274	
				Sub Total:		**£41,274**
				Scheme Cost Estimate - Grand Total:		**£206,370**

Appendix C - Audit Outputs

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	-
Scheme	Badger Hill Primary School
Location	York
Date	08/02/2023
Version Number	v0
Assessment By	Oliver Gibbs
Checked By	Luke Oddy

AECOM

Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing - Sussex Rd / Crossways		Option 1 - Sussex Rd / Crossways		Option 2 - Sussex Rd / Crossways		Option 3 - Sussex Rd / Crossways		Option 4 - Sussex Rd / Crossways	
								Existing		Option 1		Option 2		Option 3		Option 4	
								Score	Comments	Score	Comments	Score	Comments	Score	Comments	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to their journey	0	Unsafe connection to Field Lane	0	Unsafe connection to Field Lane	0	Unsafe connection to Field Lane	0	Unsafe connection to Field Lane	2	Proposed dedicated Parallel Crossing of Field Lane,
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No signage or links to onward connections.	1	Additional signange proposed	1	Additional signange proposed	1	Additional signange proposed	1	Additional signange proposed
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m.	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	Route does not form part of the official cycle network	0	Not recommnded that route forms part of the cycle network without improvements to Field Lane crossing.	0	Not recommnded that route forms part of the cycle network without improvements to Field Lane crossing.	0	Not recommnded that route forms part of the cycle network without improvements to Field Lane crossing.	1	Route proposed to form part of the cycle network
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	1	Route is not direct, but is the shortest on-road connection between Field Lane and Hull Road through Badger Hill.	1	Route is not direct, but is the shortest on-road connection between Field Lane and Hull Road through Badger Hill.	1	Route is not direct, but is the shortest on-road connection between Field Lane and Hull Road through Badger Hill.	1	Route is not direct, but is the shortest on-road connection between Field Lane and Hull Road through Badger Hill.	1	Route is not direct, but is the shortest on-road connection between Field Lane and Hull Road through Badger Hill.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	2	Cyclists only have to giveway at the Field Lane and Yarburgh Way junctions.	2	Cyclists only have to giveway at the Field Lane and Yarburgh Way junctions.	2	Cyclists only have to giveway at the Field Lane and Yarburgh Way junctions.	2	Cyclists only have to giveway at the Field Lane and Yarburgh Way junctions.	2	Cyclists only have to giveway at the Field Lane and Yarburgh Way junctions.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at signals)	1	Cyclists on-street with traffic.	1	Cyclists on-street with traffic.	1	Cyclists on-street with traffic.	1	Cyclists on-street with traffic.	1	Cyclists on-street with traffic.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	1	Cyclist on-street in low trafficked street - Likely to be able to overtake.	1	Cyclist on-street in low trafficked street - Likely to be able to overtake.	1	Cyclist on-street in low trafficked street - Likely to be able to overtake.	1	Cyclist on-street in low trafficked street - Likely to be able to overtake.	1	Cyclist on-street in low trafficked street - Likely to be able to overtake.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	No significant gradients	2	No significant gradients	2	No significant gradients	2	No significant gradients	2	No significant gradients
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	0	85th percentile speed assumed >30mph, but posted speed limit 40mph at Field Lane Junction	0	85th percentile speed assumed >30mph, but posted speed limit 40mph at Field Lane Junction	0	85th percentile speed assumed >30mph, but posted speed limit 40mph at Field Lane Junction	0	85th percentile speed assumed >30mph, but posted speed limit 40mph at Field Lane Junction	2	N/A Due to proposed signalised crossing of Field Lane
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed assumed <20mph. Residential Street.	2	85th percentile speed assumed <20mph. Residential Street.	2	85th percentile speed assumed <20mph. Residential Street.	2	85th percentile speed assumed <20mph. Residential Street.	2	85th percentile speed assumed <20mph. Residential Street.
	Avoid high motor traffic volumes where cyclists are sharing the carriageway.	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	2	Traffic flows on Sussex Road - 275 two-way and Crossways 578 two-way	2	Traffic flows on Sussex Road - 275 two-way and Crossways 578 two-way	2	Traffic flows on Sussex Road - 275 two-way and Crossways 578 two-way	2	Traffic flows on Sussex Road - 275 two-way and Crossways 578 two-way	2	Traffic flows on Sussex Road - 275 two-way and Crossways 578 two-way
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed max 30mph.	0	Cyclists within traffic lane 3.2 -3.9m; however, quiet route.	0	Cyclists within traffic lane 3.2 -3.9m; however, quiet route.	0	Cyclists within traffic lane 3.2 -3.9m; however, quiet route.	0	Cyclists within traffic lane 3.2 -3.9m; however, quiet route.	0	Cyclists within traffic lane 3.2 -3.9m; however, quiet route.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	Many side road junctions, mainly leading to residential areas - Untreated.	0	Many side road junctions, mainly leading to residential areas - Untreated.	0	Many side road junctions, mainly leading to residential areas - Untreated.	0	Many side road junctions, mainly leading to residential areas - Untreated.	0	Many side road junctions, mainly leading to residential areas - Untreated.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	No centreline markings on either road throughout. No cycle markings / infrastructure provided.	2	Improved markings strategy	2	Improved markings strategy	2	Improved markings strategy	2	Improved markings strategy
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	1	Sections of unrestricted parking along residential roads. Cyclists in the carriageway able to manoeuvre around within the lane.	1	Sections of unrestricted parking along residential roads. Cyclists in the carriageway able to manoeuvre around within the lane.	1	Sections of unrestricted parking along residential roads. Cyclists in the carriageway able to manoeuvre around within the lane.	1	Sections of unrestricted parking along residential roads. Cyclists in the carriageway able to manoeuvre around within the lane.	1	Sections of unrestricted parking along residential roads. Cyclists in the carriageway able to manoeuvre around within the lane.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Unrestricted parking along both of these residential roads. However, cyclists can use full width of the lane to evade.	1	Unrestricted parking along both of these residential roads. However, cyclists can use full width of the lane to evade.	1	Unrestricted parking along both of these residential roads. However, cyclists can use full width of the lane to evade.	1	Unrestricted parking along both of these residential roads. However, cyclists can use full width of the lane to evade.	1	Unrestricted parking along both of these residential roads. However, cyclists can use full width of the lane to evade.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Occasional defects in surfacing, particularly at raised table outside of Badger Hill Primary School	1	Occasional defects in surfacing, particularly at raised table outside of Badger Hill Primary School	2	Improvement to microsurfacing around the Badger Hill Primary junction	2	Improvement to microsurfacing around the Badger Hill Primary junction	2	Improvement to microsurfacing around the Badger Hill Primary junction
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy vehicles.	1	Concrete pavers with frequent joints	1	Concrete pavers with frequent joints	1	Concrete pavers with frequent joints	1	Concrete pavers with frequent joints	1	Concrete pavers with frequent joints
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum values.	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	1	Cyclists are in the carriageway with general traffic; however, quiet street.	1	Cyclists are in the carriageway with general traffic; however, quiet street.	1	Cyclists are in the carriageway with general traffic; however, quiet street.	1	Cyclists are in the carriageway with general traffic; however, quiet street.	1	Cyclists are in the carriageway with general traffic; however, quiet street.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No cycle signage within this section	2	Improvement to signage proposed	2	Improvement to signage proposed	2	Improvement to signage proposed	2	Improvement to signage proposed
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Route is well lit, with LED lighting at regular intervals.	2	Route is well lit, with LED lighting at regular intervals.	2	Route is well lit, with LED lighting at regular intervals.	2	Route is well lit, with LED lighting at regular intervals.	2	Route is well lit, with LED lighting at regular intervals.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	Route follows residential roads with properties overlooking frontages.	2	Route follows residential roads with properties overlooking frontages.	2	Route follows residential roads with properties overlooking frontages.	2	Route follows residential roads with properties overlooking frontages.	2	Route follows residential roads with properties overlooking frontages.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Route on-street, no impact to pedestrians.	1	Route on-street, no impact to pedestrians.	1	Route on-street, no impact to pedestrians.	1	Route on-street, no impact to pedestrians.	1	Route on-street, no impact to pedestrians.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction.	2	Street clutter does not cause an issue.	2	Street clutter does not cause an issue.	2	Street clutter does not cause an issue.	2	Street clutter does not cause an issue.	2	Street clutter does not cause an issue.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none overlooked areas	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	2	Not relevant within particular section.	2	Not relevant within particular section.	2	Not relevant within particular section.	2	Not relevant within particular section.	2	Not relevant within particular section.
							Audit Score	**26**	**0**	**30**	**0**	**31**	**0**	**31**	**0**	**36**	**0**

	Existing - Sussex Rd / Crossways	Option 1 - Sussex Rd / Crossways	Option 2 - Sussex Rd / Crossways	Option 3 - Sussex Rd / Crossways	Option 4 - Sussex Rd / Crossways
Max possible score	50	50	50	50	50
Audit % score	52%	60%	62%	62%	72%
Pass/Fail (70% threshold)	**Fail**	**Fail**	**Fail**	**Fail**	**Pass**
Any Critical Fails? (Y/N)	Yes	Yes	Yes	Yes	No
Number of Critical Fails	1	1	1	1	0

Criteria	Max Score	Sub-criteria Existing	% score Existing	Sub-criteria Existing	% score Existing	Sub-criteria Existing	% score Existing	Sub-criteria Existing	% score Existing	Sub-criteria Existing	% score Existing
Coherence	6	0	0%	1	17%	1	17%	1	17%	4	67%
Directness	10	7	70%	7	70%	7	70%	7	70%	7	70%
Safety	16	**7**	44%	**8**	50%	**8**	50%	**8**	50%	**10**	63%
Comfort	8	3	38%	5	63%	6	75%	6	75%	6	75%
Attractiveness	10	9	90%	9	90%	9	90%	9	90%	9	90%
	50										

Key Requirement	Factor	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Max Score	Existing Layout	Proposed Layout			
									Option 1	Option 2	Option 3	Option 4
Cyclists	Continuity	Ability to join/leave route safely and easily considering left and right turns		Cyclists 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	2	0	1	1	1	2
	Comfort	Pavement or carriageway construction providing smooth and level surface		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy vehicles.	2	1	1	2	2	2
	Safety	Standard of cycling facilities	At the weakest point the cycle lanes and tracks provided do not meet absolute minimum widths In locations where on-carriageway cycling is appropriate: at the weakest point, traffic lane does not meet absolute minimum widths or traffic lane is	At the weakest point the cycle lanes and tracks provided do meet absolute minimum widths at constraints but do not meet desirable minimum widths In locations where on-carriageway cycling is appropriate: at no point is the lane 3.2-3.9m wide and at the weakest point, traffic lanes do meet absolute minimum widths but do not meet desirable minimum widths	At the weakest point the cycle lanes and tracks provided meet desirable minimum widths In locations where on-carriageway cycling is appropriate: at no point is the lane 3.2-3.9m wide and at the weakest point, traffic lanes meet desirable minimum widths	At the weakest point the cycle lanes and tracks provided exceed desirable minimum widths In locations where on-carriageway cycling is appropriate: at no point is the lane 3.2-3.9m wide and at the weakest point, traffic lanes exceed desirable minimum widths	2	1	1	1	1	2
Pedestrians / Children	Engagement	Engagement for children		None	Some	Significant	2	0	0	0	1	1
	Ease of crossing	Ease of crossing side road	The weakest side road is missing at least 1 dropped kerb or these are not on the desire line.	The weakest side road has dropped kerbs and these are on the desire line or a raised table / continuous footway	The weakest side road has a narrow, tight geometry such that a turning motorised vehicle must slow down to less than 10mph but instead of a raised table it at the entrance it has dropped kerbs	The weakest side road has a narrow, tight geometry such that a turning motorised vehicle must slow down to less than 10mph and raised table / continuous footway at the entrance	2	1	1	1	1	1
	Safety hazard for children crossing	Buffer / Edge protection from the carriageway near to the school gates.		None	Some	Significant	2	0	2	2	2	2
	Safety hazard for children crossing	Standard of crossing facilities		Uncontrolled crossing with no gaps in traffic, lack of priority	Signalised crossing or implied priority	Countdown with signalised crossing, priority with unsignalised	2	0	0	1	1	2
General traffic	Vechile Speeds	Vechile Speeds	When motorised traffic is travelling at its fastest the majority of vehicles are travelling at [illegible]	When motorised traffic is travelling at its fastest the majority of vehicles are travelling at 25-30mph	When motorised traffic is travelling at its fastest the majority of vehicles are travelling at 20-25mph	When motorised traffic is travelling at its fastest the majority of vehicles are travelling below 20mph	2	1	2	2	2	2
	Volume of Motorised Traffic	Volume of Motorised Traffic	There are 1000+ vehicles in the peak our (both directions)	There are 500-999 vehicles in the peak our (both directions)	There are 200-499 vehicles in the peak our (both directions)	There are 199 or fewer vehicles in the peak our (both directions)	2	2	2	2	2	2
	Mix of Vehicles	% of Heavy Vehicles	The proportion of large vehicles is greater than 5% of motorised traffic in the [illegible]	The proportion of large vehicles is greater than 2-5% of motorised traffic in the peak hour	The proportion of large vehicles is greater than 2% of motorised traffic in the peak hour	No large vehicles use the street	2	2	2	2	2	2
	Reducing private car use	TRO's / Measures to reduce the number of parked cars		There are no new parking restrictions / Existing TRO's ignored / Parking across driveways.	There is a mixuture of parking and public realm ammenity	Parking will no longer have an impact in and around the school gates and is prevented by both TRO's and physical features within the carriageway	2	0	0	0	1	1
	Reducing convenience of driving short journeys	Through movement of traffic		Assessing the street as a whole, there are no restrictions on through movement for private motorised traffic but there are parking restrictions outside the school.	Assessing the street as a whole there is no through-movement for private motorised traffic at certain times	Assessing the street as a whole there is no through-movement for private motorised traffic at all times	2	0	0	0	0	0
Environmental	Lighting	Lighting	Assessing the full length of the street, there is no street lighting over the footways on this street	Assessing the full length of the street, street lighting provides intermittent lighting of the footway on one side of the street	Assessing the full length of the street, street lighting provides intermittent lighting of the footway on both sides of the street	Assessing the full length of the street, street lighting provides continuous lighting of all the footway on both sides of the street	2	1	1	1	1	2
	Litter /	Litter		Litter and foliage build-up is considered sigificant	There is some litter and foliage build-up within the study area and at least 1 litter bin provided within the study area.	There is no issue with litter or foliage build-up and at least 1 litter bin is provided within the study area.	2	2	2	2	2	2
	Planting	Amount of planting		Amount of greenery is reduced within the study area.	Amount of greenery is retained within the study area.	Amount of greenery is increased / enhanced within the study area.	2	1	1	1	1	1
	Greening	Green infrastructure and sustainable materials		No green infrastucture or sustainable materials proposed	Some green infrastructure or sustainable materials proposed	All infrastructure is green and materials are sustainable	2	1	1	1	1	1
Cost	Budget	Cost to implement propsed design		High	Med	Low	2	2	2	2	1	0
Buildability	Feasibility	Interfernce with C2s		Significant impacts on statutory undertakers and/ or re-routing of equipment	Minor impacts on statutory undertakers.	None of the proposed works would affect statutory undertakers.	2	2	2	1	0	0
Badger Hill Objectives	Crossing	Priority / visibility		No change to existing crossing or visibility	Improvements to crossings and visibility	Controlled crossing with improved visibility	2	0	0	1	2	2
	Parking on Verges	Parking opportunity on verges		No change to parking restrictions or kerb parking	Some mitigation against verge or kerbside parking	Significant improvement enforced by TRO or physical constraint.	2	0	1	1	2	2
	Place making and public realm	Public Realm / Placemaking		No public realm improvements or improvement connection between green space and school	Some placemaking opportunities and to connection to existing park	Significant placemaking opportunities and improved connection to existing park	2	0	0	0	2	2
						Total Score	42	17	22	24	28	31
						Percentage Score	100%	40%	52%	57%	67%	74%
						Percentage Benefit			12%	17%	26%	33%